FIS2021 cannot be held responsible for errors or inconsistencies contained within the abstract supplement. Only major formatting alterations have been made and abstract content remains consistent with what was entered at time of submission by the author/s.

How to search this document
Laptop, PC or similar: 'Ctrl' + 'F' or 'Edit' then 'Find'
Smart device: Open this PDF in either the 'iBooks' app (Apple) or 'My Files' app (Android). Both are built in apps and have a magnifying glass search icon

Contents

A quick reference guide by topic, paper number and presentation type can be found at the end of the document or click here.

(Click paper title to take you straight there)

Free paper oral presentations

Free paper poster presentations

Free paper oral presentations

14: Clinical impact and public health challenges of a PVL-MRSA bacteraemia outbreak amongst the injecting drug user community in South Yorkshire.

Dr Matthew Beaumont[1], Dr Bala Subramanian[1], Dr Kenneth Agwuh[1]
[1]*Doncaster & Bassetlaw Teaching Hospitals, Doncaster, United Kingdom,* [2]*Sheffield Teaching Hospitals, Sheffield, United Kingdom*

Background: Panton-Valentine leukocidin (PVL) methicillin-resistant Staphylococcus aureus (MRSA) is an emerging public health challenge. PVL toxin is classically associated with methicillin-sensitive Staphylococcus aureus (MSSA) causing skin and soft tissue infections in high-risk groups such as intravenous drug users (IVDU). However, the emergence of PVL-MRSA infection is causing severe and life-threatening disease in young individuals.

Clinical cases: we present a case series of seven severe PVL-MRSA bacteraemias at a UK teaching hospital between 2018 and 2021. An additional three patients developed severe bacteraemias with PVL-negative MRSA of the same multi-locus sequence type (MLST). All patients were intravenous drug users and aged between 33- 51 years old. Three patients developed MRSA bacterial endocarditis. One patient developed necrotising pneumonia. Three patients died.

Management: an outbreak investigation was undertaken in association with Public Health England. Epidemiological factors were explored, including via direct contact at a local sheltered accommodation and also a possible contaminated drug supply. DNA sequencing confirmed that all isolates were of the same MLST (type 5). A community substance misuse group disseminated health education on the prevention of PVL-MRSA. Working with the local IVDU community presents a major challenge, due to lack of engagement with services and the inherent dangers of identifying members of the drug user community.

Conclusion: this case series of PVL-MRSA infections highlights the transmissibility, pathogenic potential and severe clinical disease spectrum within an IVDU population. PVL-MRSA is of major public health concern and outbreak investigation plays a vital role in preventing further spread throughout the community.

18: Mediterranean spotted fever with multi-organ involvement in a returned traveller.

Dr Kimberly Davis[1], Dr Louise Downs[1], Dr Karthiga Sithamparanathan[2]

[1]John Radcliffe Hospital, Oxford University Hospitals NHS Foundation Trust, Oxford, UK, [2]Stoke Mandeville Hospital, Buckinghamshire Healthcare NHS Trust, Aylesbury, UK

A previously well 58 year old man returned to the UK after a week-long trip to rural Portugal, during which he cleared an overgrown garden. The day after returning he developed malaise, fevers, rigors and severe headache. He was admitted to a local hospital on day 7 of illness with sepsis, multi-organ involvement, a diffuse, erythematous, maculo-papular rash, an eschar on each hip and bilateral non-purulent conjunctivitis. He denied any animal contact, bites or stings.

Initial bloods showed a mild anaemia (Hb 120g/dL), thrombocytopaenia (Plt 88x10^9/L), significant inflammatory response (ferritin 11,621 ng/mL, CRP 217 mg/L, D Dimer 9,166 ug/L and LDH 721 U/L) and mild hepatitis (ALT 172 U/L). He had a short stay in ITU requiring inotropic and respiratory support. He was started on empirical doxycycline for likely Rickettsial disease and serology was subsequently positive for Rickettsia spp (Spotted Fever Group) with a rise in titre from 1:64 initially to 1:1024 eight days later. Blood and tissue PCR were also positive for Rickettisa spp. The patient was diagnosed with Purtscher-like retinopathy, an ocular complication not previously described in association with Rickettsial infection. He completed a 14 day course of oral doxycycline and recovered well.

This is a case of Mediterranean spotted fever (MSF) likely caused by Rickettsia conorii which is endemic in Portugal but rarely seen in returning travellers. Here we highlight the need for awareness and early treatment with doxycycline as untreated MSF can lead to severe complications and death.

22: Antiviral metabolite 3'-Deoxy-3',4'-didehydro-cytidine is detectable in serum and identifies acute viral infections including COVID-19

Dr Ravi Mehta[1], Dr Elena Chekmeneva[1,2], Ms Heather Jackson[1], Dr Caroline Sands[1,2], Ms Ewurabena Mills[1], Dr Ho Kwong Li[1], Professor Graham Cooke[1], Professor Mahdad Noursadeghi[3], Dr Myrsini Kaforou[1], Dr Matthew Lewis[1,2], Professor Zoltan Takats[1,2], Professor Shiranee Sriskandan[1]
[1]Imperial College London, London, UK, [2]The National Phenome Centre, London, UK, [3]University College London, London, UK

Background:

There is a critical need for improved infectious disease diagnostics to enable rapid case identification in a viral pandemic and support targeted antimicrobial prescribing.

Methods:

We used untargeted high-resolution liquid chromatography coupled with mass spectrometry to compare the admission serum metabolome of patients attending two UK emergency departments with acute viral infections, including SARS-CoV-2, to those with bacterial infections, non-infected inflammatory conditions, and healthy controls.

Results:

We demonstrated for the first time that 3'-Deoxy-3',4'-didehydro-cytidine (ddhC), a free base of the only known human antiviral small molecule ddhC-triphosphate (ddhCTP), is detectable in serum. ddhC acts as an accurate biomarker for viral infections, generating an area under the receiver operating characteristic curve of 0.954 (95% confidence interval 0.923-0.986) when comparing viral to non-viral cases. Gene expression of viperin and CMPK2, the enzymes responsible for ddhCTP synthesis, were amongst the five genes most highly correlated to ddhC abundance in the entire human transcriptome.

Interpretation:

The antiviral precursor molecule ddhC is detectable in serum and is an accurate marker for acute viral infection. The interferon-inducible genes viperin and CMPK2 are implicated in ddhC production in vivo. These findings highlight a key future diagnostic role for ddhC in the context of pandemic preparedness and acute infection management.

23: Quantification and clinical significance of interferon-γ secreting SARS-CoV-2 responsive T cells in hospitalised patients with COVID-19

Dr Daniel Pan[1,2], Dr Jee Whang Kim[1,3], Dr Joshua Nazareth[1,2], Dr Sara Assadi[2], Dr Adam Bellass[2], Mr Jack Leach[4], Mr James G Brosnan[4], Mr Adam Ahmed[4], Dr Fleur Starcevic[2], Dr Shirley Sze[5], Dr Christopher A Martin[1,2], Dr Caroline M Williams[1,6], Professor Michael R Barer[1,6], Dr Amadip Sahota[2], Dr Prashanth Patel[7], Dr Andrea Tatersall[8], Professor Andrea Cooper[1,9], Dr Manish Pareek[1,2], Dr Pranabashis Haldar[1,3]

[1]Department of Respiratory Sciences, University of Leicester, United Kingdom, [2]Department of Infectious Diseases and HIV Medicine, University Hospitals of Leicester NHS Trust, United Kingdom, [3]Respiratory Biomedical Research Centre, University of Leicester, United Kingdom, [4]University of Leicester Medical School, University of Leicester, United Kingdom, [5]Department of Cardiovascular Sciences, University of Leicester, United Kingdom, [6]Department of Microbiology, University Hospitals of Leicester NHS Trust, United Kingdom, [7]Department of Chemical and Metabolic Diseases, University Hospitals of Leicester NHS Trust, United Kingdom, [8]Oxford Immunotec Ltd, Oxford, United Kingdom, [9]Trudeau Institute, Saranac Lake, United States of America

Introduction: Little is known about T-cell responses during acute COVID-19. We aimed to evaluate this in relation to symptom onset, disease severity and vaccination in hospitalised COVID-19 patients.

Methods: Between February and March 2021, blood samples taken from hospitalised patients with PCR confirmed SARS-CoV-2 were processed using the T-SPOT® Discovery assay (T-SPOT), which detects IFN-γ release from T cells after exposure to SARS-CoV-2 peptides (S1, S2, nucleocapsid and membrane), at the University Hospitals of Leicester NHS Trust, UK.

Results: 114 patients were recruited; median age 64 (IQR 52-78); 24 patients received continuous positive airway pressure (CPAP) after sampling; 10 had nosocomial COVID-19. 36 had been vaccinated with one dose of either Oxford AstraZeneca or Pfizer BioNTech. The median duration of symptoms at the time of testing was 10 days (IQR 7-15); median S1 T-SPOT was 5 (2-54); S2: 5 (2-22); nucelocapsid 3 (0-7) membrane 3 (1-10). T-SPOT responses occurred at similar times to antibody responses. All responses were higher in those who received CPAP (total response in CPAP: 232 [135-320] vs no CPAP: 13 [5-36] $p<0.001$), but did not differ according to vaccination status. On multivariable linear regression analysis, a higher S1 peptide response was associated with higher ISARIC mortality scores (adjusted coefficient 0.1, 95% CI 0.02 to 0.1, $p=0.01$).

Conclusion: T-cell responses appear as early as antibody responses in acute COVID-19 and appear independent of vaccination status; higher responses are associated with disease severity. Our study highlights the importance of the T-cell response in potentiating acute infection.

25: Preserved C-reactive protein responses to blood stream infections following tocilizumab treatment for COVID-19

Dr Emmanuel Q Wey[1,2], **Dr Clare Bristow[1]**, Mr Aarti Nandani[3], Mr Bryan O'Farrell[3], Mr Jay Pang[3], Miss Marisa Lanzman[3], Dr Shuang Yang[4], Dr Soo Ho[1], Dr Damien Mack[1], Mr Michael Spiro[5], Dr Indran Balakrishnan[1], Dr Sanjay Bhagani[1], Dr Gabriele Pollara[1,6]
[1]Department of infection, Royal Free London NHS Trust, London, UK, [2]Centre for Clinical Microbiology, Division of Infection & Immunity, UCL, London, UK, [3]Department of Pharmacy, Royal Free London NHS Trust, London, UK, [4]Clinical Practice Group, Analysis Division, Transplant and Specialist Services & Women and Children, Royal Free London NHS Trust, London, UK, [5]Division of Surgery and Interventional Science, University College London, London, UK, [6]Division of Infection & Immunity, University College London, London, UK

Objectives

Inhibition of the IL-6 pathway by tocilizumab may attenuate C-reactive protein (CRP) responses to bacterial co-infections in COVID-19, thwarting antimicrobial stewardship efforts. We used the onset of blood stream infections (BSIs) to assess whether prior tocilizumab use impacted the utility of CRP to diagnose bacterial co-infections associated with COVID-19.

Methods

We identified 107 COVID-19 patients that received tocilizumab during their hospital admission, of which 17 developed a BSI. We also identified 55 COVID-19 patients who developed a BSI but that had not received tocilizumab. Serial CRP and white cell count (WCC) measurements were used to make kinetic assessments of inflammatory marker responses relative to tocilizumab administration and BSI onset.

Results

Tocilizumab induced a rapid fall in CRP, but not WCC, within 7 days of administration ($p < 0.0001$). However, CRP levels rebounded from this nadir within 21 days of tocilizumab receipt ($p = 0.0007$). In COVID-19 patients that developed a BSI, CRP levels increased following a BSI both in the presence or absence of tocilizumab ($p = 0.0055$ and $p = 0.0042$ respectively), and equivalent elevations in CRP increase were observed in these groups (median CRP change +88 mg/L vs +76 mg/L respectively, $p = 0.67$). BSI-related CRP increments were not quantitively related to the time interval between tocilizumab administration and BSI onset ($r = 0.1069$, $p=0.6811$).

Conclusions

Tocilizumab use in the treatment of severe COVID-19 does not attenuate CRP responses to bacterial co-infections, preserving the use of this biomarker to guide judicious antibiotic prescribing in COVID-19

34: Identification Of A Putative Transcription Factor In Chlamydia trachomatis

Ms Srishti Baid[1], Dr. Micheal L Barta, Dr. Scott Lovell, Dr P.Scott Hefty
[1]*University Of Kansas, Lawrence, United States*

Chlamydia trachomatis is a worldwide public health challenge as the primary cause of bacterial sexually transmitted infections and blindness. These are obligate intracellular bacteria that are maintained through a biphasic developmental cycle that includes conversions between distinct infectious elementary bodies and non-infectious, replicative reticulate bodies. The ability of the organism to infect and cause disease, is dependent on careful regulation of conversion and replication processes. The regulatory factors and mechanisms that control the conversion processes of the developmental cycle are still being discovered and characterized. Through protein structure determination and database analysis, a protein of unknown function (CT457) is hypothesized to serve as a transcription factor and contribute to the regulation of chlamydial processes. Protein structure similarity supports functional annotation as a YebC/PmpR transcription factor which homologs have been shown to control a diverse array of genes in many bacteria. To investigate the potential function of CT457 as a transcription factor and identify an associated regulon, RNA seq experiments were performed in Chlamydia following expression induction. Additionally, morphologic analyses were performed following overexpression to potentially discover contributions to growth or conversion processes. Further studies will be performed to evaluate the role of CT457 and decipher its importance in chlamydial biology.

42: HIV-1 Vpr drives a tissue residency-like phenotype during selective infection of resting memory T cells

Dr Ann-Kathrin Reuschl[1], Dr Dejan Mesner[1], Dr Maitreyi Shivkumar[2], Dr Laura J Pallett[1], Dr José Afonso Guerra-Assunção[1], Prof Mahdad Noursadeghi[1], Prof Mala Maini[1], Prof Clare Jolly[1]
[1]University College London, , , [2]De Montfort University, Leicester,

Human Immunodeficiency Virus 1 (HIV-1) replicates in human CD4+ T cells leading to profound immunological dysfunction and AIDS. Determining how HIV-1 shapes its niche to create a permissive environment is central to informing efforts to limit pathogenesis, disturb viral reservoirs and achieve cure. A key roadblock in understanding HIV-T cell interactions is the requirement to activate T cells in vitro to make them permissive to infection. This dramatically alters T cell biology, obscuring native virus-host interactions. Here we show that HIV-1 cell-to-cell spread permits efficient and productive infection of resting memory T cells without prior activation. Strikingly, we find HIV-1 infection primes resting T cells for induction of a tissue-resident memory (TRM)-like phenotype via Vpr. This is evidenced by upregulation of TRM cell surface markers and the transcription factor Blimp-1, and induction of a transcriptional programme that overlaps the core TRM transcriptional signature. Thus HIV-1 reprogrammes T cells via Vpr with implications for viral replication and persistence.

47: Post-vaccination COVID-19: A case-control study and genomic analysis of 119 breakthrough infections in partially vaccinated individuals

Dr Ioannis Baltas[1], Dr Florencia A. T. Boshier[2], Ms Charlotte A Williams[3], Ms Nadua Bayzid[3], Mr Marius Cotic[3], Dr José Afonso Guerra-Assunção[3], Dr Dianne Irish-Tavares[1], Dr Tanzina Haque[1], Dr Jeniffer Hart[1], Dr Sunando Roy[2], Dr Rachel Williams[3], Professor Judith Breuer[2,4], Dr Tabitha W Mahungu[1]

[1]Department of Virology, Royal Free London NHS Foundation Trust, London, United Kingdom, [2]Department of Infection, Immunity and Inflammation, UCL Great Ormond Street Institute of Child Health, University College London, London, United Kingdom, [3]Department of Genetics & Genomic Medicine, UCL Great Ormond Street Institute of Child Health, University College London, London, United Kingdom, [4]Department of Microbiology, Great Ormond Street Hospital for Children NHS Foundation Trust, London, United Kingdom

Background

Post-vaccination infections challenge the control of the COVID-19 pandemic.

Methods

We matched 119 cases of post-vaccination SARS-CoV-2 infection with BNT162b2 mRNA, or ChAdOx1 nCOV-19, to 476 unvaccinated patients with COVID-19 (Sept 2020-March 2021), according to age and sex. Differences in 60-day all-cause mortality, hospital admission, and hospital length of stay were evaluated. Phylogenetic, single nucleotide polymorphism (SNP) and minority variant allele (MVA) full genome sequencing analysis was performed.

Results

116/119 cases developed COVID-19 post first vaccination dose (median 14 days, IQR 9 – 24 days). Overall, 13/119 (10·9%) cases and 158/476 (33·2%) controls died (p<0.001), corresponding to 4·5 number needed to treat (NNT). Multivariably, vaccination was associated with 69·3% (95%CI 45·8 – 82·6) relative risk (RR) reduction in mortality. Similar results were seen in subgroup analysis for patients with infection onset ≥14 days after first vaccination (RR reduction 65·1%, 95%CI 27·2 – 83·2, NNT 4·5), and across vaccine subgroups (BNT162b2: RR reduction 66%, 95%CI 34·9 – 82·2, NNT 4·7, ChAdOx1: RR reduction 78·4%, 95%CI 30·4 – 93·3, NNT 4·1). Hospital admissions (OR 0·80, 95%CI 0·51 – 1·28), and length of stay (-1·89 days, 95%CI -4·57 – 0·78) were lower for cases, while Ct values were higher (30·8 versus 28·8, p = 0.053). B.1.1.7 was the predominant lineage in cases (100/108, 92.6%) and controls (341/446, 76.5%). Genomic analysis identified one post-vaccination case harboring the E484K vaccine escape mutation (B.1.525 lineage).

Conclusions

Previous vaccination reduces B.1.1.7-associated mortality. No significant lineage-specific genomic changes during phylogenetic, SNP and MVA analysis were detected.

60: Lysosome Fusion Maintains Phagosome Integrity during Fungal Infection

Dr Johannes Westman[1]

[1]The Hospital for Sick Children, Toronto, Canada

Phagosomes must maintain membrane integrity to exert their microbicidal function. Some microorganisms, however, survive and grow within phagosomes. In such instances, phagosomes must expand to avoid rupture and microbial escape. We studied whether phagosomes regulate their size to preserve integrity during infection with the fungal pathogen Candida albicans. Phagosomes release calcium as C. albicans hyphae elongate, inducing lysosome recruitment and insertion, thereby increasing the phagosomal surface area. As hyphae grow, the expanding phagosome consumes the majority of free lysosomes. Simultaneously, lysosome biosynthesis is stimulated by activation of TFEB, a transcriptional regulator of lysosomal biogenesis. Preventing lysosomal insertion causes phagosomal rupture, NLRP3 inflammasome activation, IL-1b secretion and host-cell death. Whole-genome transcriptomic analysis demonstrate that stress responses elicited in C. albicans upon engulfment are reversed if phagosome expansion is prevented. Our findings reveal a mechanism whereby phagosomes maintain integrity while expanding, ensuring that growing pathogens remain entrapped within this microbicidal compartment.

67: Evaluation of procalcitonin-guided antimicrobial stewardship in patients admitted to hospital with COVID-19 pneumonia

Dr Maria Calderon[1], Dr Ang Li[1], Dr Juan Carlos Bazo-Alvarez[2], Dr Jonathan Dennis[1], Dr Kenneth F Baker[3], Dr Ina Schim van der Loeff[3], Dr Aidan T Hanrath[1], Dr Richard Capstick[1], Dr. Brendan A I Payne[1], Dr Daniel Weiand[4], Dr Ewan Hunter[1], Dr Ulrich Schwab[1]

[1]Department of Infection and Tropical Medicine, The Newcastle upon Tyne Hospitals NHS Foundation Trust, Royal Victoria Infirmary, Newcastle upon Tyne, UK, Newcastle Upon Tyne, UK, [2]Research Department of Primary Care & Population Health, University College London, London, UK, London, UK, [3]Translational and Clinical Research Institute, Newcastle University, Newcastle upon Tyne, UK, Newcastle Upon Tyne, UK, [4]Microbiology Department, Integrated Laboratory Medicine Directorate, The Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle upon Tyne, UK, Newcastle Upon Tyne, UK

Background

Procalcitonin is a biomarker that may be able to identify patients with COVID-19 pneumonia who do not require antimicrobials for bacterial respiratory tract co-infections.

Objectives

To evaluate the safety and effectiveness of a procalcitonin-guided algorithm in rationalizing empirical antimicrobial prescriptions in non-critically ill patients with COVID-19 pneumonia.

Methods

Retrospective, single-site, cohort study in adults hospitalized with confirmed or suspected COVID-19 pneumonia and receiving empirical antimicrobials for potential bacterial respiratory tract co-infection. Regression models were used to compare the following outcomes in patients with and without procalcitonin testing within 72 h of starting antimicrobials: antimicrobial consumption (DDD); antimicrobial duration; a composite safety outcome of death, admission to HDU/ICU or readmission to hospital within 30 days; and length of admission. Procalcitonin levels of ≤0.25 ng/L were interpreted as negatively predictive of bacterial co-infection. Effects were expressed as ratios of means (ROM) or prevalence ratios (PR) accordingly.

Results

259 patients were included in the final analysis. Antimicrobial use was lower in patients who had procalcitonin measured within 72 h of starting antimicrobials: mean antimicrobial duration 4.4 versus 5.4 days, adjusted ROM 0.7 (95% CI 0.6–0.9); mean antimicrobial consumption 6.8 versus 8.4 DDD, adjusted ROM 0.7 (95% CI 0.6–0.8). Both groups had similar composite safety outcomes (adjusted PR 0.9; 95% CI 0.6–1.3) and lengths of admission (adjusted ROM 1.3; 95% CI 0.9–1.6).

Conclusions

A procalcitonin-guided algorithm may allow for the safe reduction of antimicrobial usage in hospitalized non-critically ill patients with COVID-19 pneumonia.

71: Clinical and genomic characterisation of repeatedly positive SARS-CoV-2 results: re-infection or viral persistence?

Dr Catherine Wilson[1], Dr James Sheppherd[2], Ms Ioulia Tsatsani[2], Professor Emma Thomson[2]
[1]NHS Greater Glasgow And Clyde, Glasgow, Scotland, [2]MRC University of Glasgow Center for Virus Research , Glasgow , Scotland

Background: It is known that some individuals repeatedly test positive for SARS-CoV-2 RNA weeks or months after initial COVID-19 infection. The mechanisms underlying this phenomenon have not been well-explored.

Methods: To investigate why, we systematically identified all cases of potential reinfection or viral persistence in the West of Scotland over a 14-month period. Whole genome sequencing in combination with clinical metadata were used to look for evidence of reinfection or genomic variation and sequences of interest were compared with the wider Scottish population, using data obtained from the COG-UK cohort.

Results: Using sequencing to discriminate between reinfection and persistent infection, we found no evidence of reinfection. Viral persistence was seen in 8 individuals, all of whom were elderly or immunosuppressed. Synonymous and non-synonymous variation was seen at the second timepoint in 3 individuals, all within previously identified T cell epitopes. Within host evolution was faster compared to current SARS-CoV-2 estimates of population-based rates of evolution.

Discussion: To date, the majority of reported cases of viral persistence have occurred in the context of B cell immunosuppression. We report the potential for SARS-CoV-2 to persist and replicate in an elderly cohort who were not formally immunosuppressed. Whether individuals harboring persistent virus have the capability to infect others requires future elucidation, with crucial relevance for outbreak prevention when discharging to care homes, as cases within our study were.

74: Spread of Malacoplakia of Kidney to Adjacent Organs due to Delayed Recognition and Management

Dr Krishna Banavathi[1], Dr Nimali Gamage[1], Mr Pankaj Pankaj[1]
[1]*University Hospitals of North Midlands NHS Trust, Stoke-on-Trent, United Kingdom*

A 55 year old male with spinal stenosis and disc prolapse was suspected to have right renal mass based on CT findings. Blood culture grew Escherichia coli and was given IV co-amoxiclav based on susceptibilities. Patient continued to deteriorate on antibiotics and repeat CT was suggestive of progression of right renal lesion now suspected to be abscess which had spread to the subcapsular liver parenchyma. Patient underwent right nephrectomy and samples grew E.coli. . Patient was discharged after 6 weeks of IV antibiotics. Histology of the nephrectomy was reported as malacoplakia.

Four months after discharge patient returned with sepsis. CT showed inflammatory mass in right renal bed extending to subcutaneous plane with spontaneous fistula and involvement of small bowel by disease and no drainable collection. Patient was not fit for further surgery and started improving on antibiotics. The antibiotics were initially changed to ciprofloxacin given for 4 weeks and later to oral cotrimoxazole for 12 months to be reviewed at the end of treatment.

Malacoplakia is caused by defects in phagocytic function of histiocytes, followed by intracellular deposition of iron and calcium (Michaelis-Gutmann bodies). Treatment of malakoplakia is mostly medical with surgical intervention not needed if diagnosed early. Antibiotics which work intracellularly like quinolones, trimethoprim and rifampicin should be used in treatment. Nephrectomy may be necessary in unilateral disease with large abscess. Malacoplakia is difficult to diagnose by symptoms or imaging and is mainly a histological diagnosis. This causes delay in diagnosis and treatment as happened in our case.

91: A Strep in the Right Direction: The Prevalence of Infective Endocarditis in Viridans group Streptococci bacteraemia, a retrospective analysis

Dr James Meiring[1], **Dr Luke Mair[2]**, Dr Oliver Watson[2], Professor Abdallah Al-Mohammad[2], Dr Helena Parsons[2], Dr Gayti Morris[2]
[1]Sheffield University , [2]Sheffield Teaching Hospitals

Background

The viridans group streptococci (VGS) are a heterogenous group of organisms that are common commensals of the human oral cavity and an important cause of infective endocarditis (IE), a severe infection with high mortality. Recent evidence suggests the risk of endocarditis varies significantly between species of VGS though this is not reflected in the European Society of Cardiology microbiology IE guidelines.

Methods

We performed a retrospective review of all VGS isolates from patients > 18 years old across Sheffield Teaching Hospitals (STH), isolated from a peripheral culture, where the species had been identified, from January 2016 to December 2020. Duplicate cultures from within one month were removed, as were line associated infections.

Results

From a total of 694 VGS isolates, 241 were identified at the species level. Streptoccus mutans bacteraemia had the highest IE prevalence of 86% (95% CI, 42-99) with 6 out of 7 isolates diagnosed as IE. Gordonii (66% (95% CI, 9-99)), Sanguinis (33% (95% CI, 10-65)) and Gallolyticus (17% (95% CI, 8-29)) also had high rates of IE. A number of species (Angiosus, Constellatus and Intermedius) had 0 cases of IE.

Conclusion

Our local data, supports recent evidence indicating the risk of IE should be determined at a species level. These changes should be reflected in international guidance and will have a direct impact on patient care.

93: Microbiota-derived metabolites inhibit Salmonella virulent subpopulation development by acting on single-cell behaviors

Dr Alyson Hockenberry[1,2], Dr. Gabriele Micali[1,2], Gabriella Takacs[1,2], Jessica Weng[1,2], Prof. Wolf-Dietrich Hardt[1,2], Prof. Martin Ackermann[1,2]
[1]ETH Zurich, Zurich, Switzerland, [2]Eawag, Dübendorf, Switzerland

Salmonella spp. express Salmonella pathogenicity island-1 Type 3 Secretion System (T3SS-1) genes to mediate the initial phase of interaction with their host. Prior studies indicate short-chain fatty acids, microbial metabolites at high concentrations in the gastrointestinal tract, limit T3SS-1gene expression. Only a subset of Salmonella cells in a population express these genes, suggesting short-chain fatty acids could decrease T3SS-1 population-level expression by acting on per-cell expression or the proportion of expressing cells. Here, we combine single-cell, theoretical, and molecular approaches to address the effect of short-chain fatty acids on T3SS-1 expression. Our results show short-chain fatty acids do not repress T3SS-1 expression by individual cells. Rather, these compounds act to selectively slow the growth of T3SS-1 expressing cells, ultimately decreasing their frequency in the population. Slowed growth arises from short-chain fatty acid-mediated depletion of the proton motive force. By influencing the T3SS-1 cell-type proportions, gut microbial metabolites act on cooperation between the two cell-types.

Significance

Emergence of distinct cell-types in populations of genetically identical bacteria is common. Furthermore, it is becoming increasingly clear that cooperation between cell-types can be beneficial. This is the case during Salmonella infection, in which cooperation between inflammation-inducing virulent and fast-growing avirulent cell-types occurs during infection to aid in colonization of the host gut. Here, we show gut microbiota-derived metabolites slow growth of the virulent cell-type. Our study implies microbial metabolites shape cooperative interactions between the virulent and avirulent cell types, a finding that can help explain the wide array of clinical manifestations of Salmonella infection.

99: Repeated transmission of SARS-COV-2 in an overcrowded Irish emergency department elucidated by local whole genome sequencing

Dr Daniel Hare[1], Mr James Powell[1], Ms Barbara Slevin[1], Dr Carolyn Meaney[1], Ms Breda O' Brien[1], Dr Lorraine Power[1], Dr Nuala O' Connell[1], Professor Colum Dunne[2], Dr Patrick Stapleton[1]
[1]University Hospital Limerick, , Ireland, [2]School of Medicine, University of Limerick, , Ireland

Background: Preventing Covid-19 cross-transmission in hospitals is an Infection Prevention and Control (IPC) priority. To facilitate this, SARS-CoV-2 whole-genome-sequencing (WGS) was established at University Hospital Limerick (UHL), Ireland, to provide actionable results in near real-time to the IPC team. We describe SARS-CoV-2 outbreaks originating in the Emergency Department (ED) at UHL and how in-house WGS aided IPC investigations.

Methods: Healthcare Associated Infection (HCAI) with Covid-19 was defined in accordance with national surveillance definitions. WGS was performed locally on RNA extracted from nasopharyngeal swabs of patients using a MinIon Mk1C (Oxford Nanopore Technologies) platform following the ARTIC v3 protocol. Analyses were completed on a Unix workstation using the command line tools 'Pangolin' and 'ncov-tools.'

Results: In early April 2021, outbreaks of Covid-19 were declared on two wards at UHL, involving nine patients. Viral WGS was performed locally, with preliminary results available to the IPC team within seven days of outbreak declarations. Two distinct clusters of 'Alpha' sequences (pairwise distance ≤1 SNP) were identified. Integrating genomic findings with an epidemiological investigation, the index cases in both outbreaks were identified as patients who attended the overcrowded ED "Covid stream", with community-acquired and HCAI Covid respectively. Onward transmission in the ED and on two inpatient wards was demonstrated and supported by sequencing data, including spread from a fully vaccinated HCAI patient and a suspected airborne transmission event.

Conclusion: Cross-transmission of SARS-CoV-2 occurred repeatedly in an overcrowded ED. WGS carried out locally in hospitals can facilitate detailed and prompt analysis of complex viral transmission networks

101: The impact of heterologous prime-boost COVID vaccination schedules and long vs short prime-boost interval on immunogenicity and reactogenicity: Results from the Com-COV trial and the potential ramifications for UK and international immunisation policy

Dr Robert Shaw[1,2], Dr Arabella Stuart[1,2], Ms Melanie Greenland[1], Dr Xinxue Liu[1], Prof Matthew Snape[1,3], Com-COV Study Group

[1]Oxford Vaccine Group, Department of Paediatrics, University Of Oxford, Oxford, United Kingdom, [2]Oxford University Hospitals NHS Foundation Trust, Oxford, United Kingdom, [3]NIHR Oxford Biomedical Research Centre, Oxford University Hospitals NHS Foundation Trust, Oxford, United Kingdom

There are a number of COVID vaccines with WHO or UK emergency licensure, as 1- or 2-dose homologous schedules. Heterologous prime-boost COVID-19 vaccination is a way to mitigate against interruptions to vaccine supply or local shortages that might otherwise reduce the speed of vaccine roll-out nationally and internationally. In addition, the changes to recommendations regarding use of the ChAdOx1 nCoV-19 in light of the developing safety profile, which have occurred in several countries, has resulted in large numbers of the population receiving heterologous vaccination by default. In addition, in a bid to avert deaths and hospitalisation, many countries have elected to extend the prime-boost interval of vaccination programmes to vaccinate a greater proportion of population sooner with one dose.

Com-COV is a single-blind, UK multi-centre, randomised control trial to assess non-inferiority of immunogenicity of homologous/heterologous schedules using the ChAdOx1 nCoV-19 and BNT162b2 vaccines in adults aged 50 and over with no or well controlled comorbidities. Additionally it provides the first fully randomised data comparing immunogenicity of short and long prime-boost interval approaches to vaccination.

Results from participants boosted at a 28-day prime-boost (short) interval show that ChAdOx1 nCoV-19/BNT162b2 is more immunogenic than ChAdOx1 nCoV-19/ChAdOx1 nCoV-19 both from a humoral and a cellular perspective, whilst BNT162b2/ChAdOx1 nCoV-19 is not as immunogenic as BNT162b2/BNT162b2 from a humoral point of view, whereas the difference in cellular response was equivocal. The results from participants boosted at an 84-day prime-boost (long) interval are soon to be in pre-print which helps delineate the effect of interval.

118: A case of recurrent Achromobacter xylosoxidans bacteraemia and PICC (peripherally-inserted central catheter) line infection in an immunocompromised patient

Dr Elaine Houlihan[1], Aruna Pandian[1], Belinda Hanahoe[1], Frances Higgins[1], Niall DeLappe[1], Dr Mary Lucey[1], Dr Janusz Krawczyk[1], Dr Deirbhile Keady[1]
[1]*University Hospital Galway, , Ireland*

Achromobacter xylosoxidans is an aerobic, non-lactose fermenting gram-negative bacillus usually considered an opportunistic pathogen of low-virulence but has been associated with healthcare-associated infections, especially in immunocompromised patients. It is an emerging pathogen in line- and catheter-related infections, sometimes associated with contaminated water. Treatment is challenging as it is increasingly resistant to many antimicrobial agents. Empiric treatment with anti-pseudomonal penicillins or carbapenems with line removal is typically required.

This report describes recurrent A. xylosoxidans bloodstream and PICC (peripherally-inserted central catheter) line infection in a 64-year-old female with acute promyelocytic-leukemia. The first episode occurred during a non-neutropenic febrile episode, with A. xylosoxidans isolated from multiple PICC and peripheral blood cultures, and from the tip of the line on removal. The patient was treated with meropenem with good clinical response and a new PICC line was inserted after sterile blood cultures. Six weeks later, she represented with A. xylosoxidans from multiple cultures from the line. She was treated with piperacillin-tazobactam and the line removed. There was no evidence of deep-seated infection. Further discussion revealed that the patient was using a sponge to clean, and a sleeve to cover her PICC line while bathing. A. xylosoxidans was cultured from both the sponge and the swab. Susceptibility testing was comparable between all isolates. Whole Genome Sequencing performed on two blood culture and the environmental isolates confirmed all four isolates were indistinguishable.

The patient was advised not to use the sponge/sleeve in future and we have incorporated specific advice in this regard into our patient information.

122: Establishing the predictive power of whole genome sequencing to determine antimicrobial susceptibility of Escherichia coli and Klebsiella pneumoniae

Mr Luke Turner[1], Dr. Mandy Wootton[1], Dr. Massimo Mentasti[1], Dr. Lim Jones[1]
[1]*Public Health Wales, Cardiff, Wales*

Background

As levels of antimicrobial resistance continue to rise, antimicrobial susceptibility testing (AST) is more important than ever for guiding antimicrobial therapy regimes, especially in multidrug-resistant isolates such as carbapenemase-producing Enterobacterales (CPE). The increasing availability of whole-genome sequencing (WGS) technology in the clinical laboratory may offer a way to improve current phenotypic methodologies.

Objectives

To assess the predictive power of WGS in determining antimicrobial susceptibility of Escherichia coli and Klebsiella pneumoniae, with particular emphasis on CPEs.

Methods

Eleven antimicrobials (ampicillin, ceftazidime, cefotaxime, co-amoxiclav, ertapenem, meropenem, amikacin, gentamicin, tobramycin, ciprofloxacin and colistin) were tested using the gold standard micro-broth dilution against a collection of Escherichia coli (n = 85) and Klebsiella pneumoniae (n = 116) strains. The same strain collection was sequenced using Illumina technology and bioinformatic tools (ABRicate and Kleborate) were used to predict antimicrobial susceptibility. Categorical agreement, sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), major error (ME) and very major error (VME) rates were assessed.

Results

Overall, results demonstrated unacceptable correlations between phenotypic and genotypic data. Either categorical agreement rate was <95%, VMEs were >1%, MEs were >3% or a combination was observed. Prediction of carbapenem susceptibility was particularly poor with all organism-carbapenem combinations demonstrating VME's of ≥ 11.9%.

However, some organism-antimicrobial combinations (e.g. E. coli-gentamicin) exhibited high categorical agreement rates of ≥ 97.4%.

Conclusions

Unacceptable correlations between phenotypic and genotypic data were observed for most organism-antimicrobial combinations suggesting that WGS-AST is still not applicable to a clinical microbiology laboratory.

126: Klebsiella-macrophage arms-race: dissecting how the pathogen copes with a macrophage lifestyle

Mrs Brenda Morris[1], Dr Amy Dumigan[1], Dr Joana Sa Pessoa[1], Professor Jose Bengoechea[1]
[1]*Queen's University , Belfast, United Kingdom*

Klebsiella pneumoniae is a multi-drug resistant human pathogen causing urinary tract infections, pneumonia and septicaemia. In a landmark contribution from our laboratory, we showed that K. pneumoniae persists intracellularly within the Klebsiella containing vacuole (KCV), by blocking phagolysosomal maturation. In this work, we have investigated the metabolic adaptation of K. pneumoniae to an intracellular lifestyle. In vitro, Klebsiella is capable of carrying out glycolysis/gluconeogenesis, the pentose phosphate pathway, the citric acid cycle (TCA) and glyoxylate pathway. To dissect intracellular K. pneumoniae metabolism, we have followed a genetic approach, generating mutants in key enzymes of each pathway. These mutants were assessed for in vitro growth kinetics using different carbon sources, adhesion, phagocytosis and intracellular survival in macrophages, as well as intracellular trafficking and macrophage response to infection. Also, using a pharmacologic approach and real time flux analysis, we have determined macrophage metabolism upon Klebsiella infection, and linked it to intracellular survival and immune responses. Our data revealed two categories of K. pneumoniae metabolic mutants with defects in intracellular survival. One set, in which the Klebsiella-controlled blockage of phagolysosome maturation was compromised, and the other unable to survive in the KCV. The former set also elicited a macrophage inflammatory response. Furthermore, Klebsiella infection induced an increase in macrophage glycolysis. Pharmacologic inhibition of this glycolysis negatively impacted Klebsiella intracellular survival. In conclusion, we have uncovered new means exploited by a human pathogen to subvert macrophage intrinsic immunity, and discovered that K. pneumoniae rewires macrophage metabolism to persist intracellularly.

127: A new seas-onal pathogen? A case series of not so comma-n bacteria

Dr Daisy Woolham[1], Dr Lara Staffurth[1], Dr Anna Crepet[1], Dr Lydia Warren[1], Dr Gill Jones[1], Dr Matthew Stevens[2]

[1]Universiy Hospitals Sussex, [2]Royal Sussex County Hospital Brighton

Introduction:

We describe three patients from July and August 2021 with diverse presentations but the same, unusual causative pathogen. This organism was identified only once in our laboratory in 2020, and prior to this had not been seen since 2017. Is a surge in 'stay-cations' to blame or might there be something fishy going on?

Methods:

An 8-year-old boy with a background of leukaemia, bone marrow transplants and pancytopaenia presented with fever, abdominal pain and tenderness around his PICC line. Examination was unremarkable. On observation, he was tachycardic, tachypnoeic and his temperature was 39.5°C. He treated for neutropaenic sepsis. Blood tests on admission showed pancytopaenia (neutrophils 0.0) with CRP 24; this subsequently rose to 144. On Day 2 of his admission, blood cultures identified the causative organism and his antibiotics were changed.

A 56-year-old gentleman injured his foot and developed a wound infection, managed by his GP.

An 11-year-old boy fell onto some rocks sustaining a leg laceration. He presented to A&E as his mother was concerned about the appearance, and was discharged on antibiotics.

Discussion:

The causative organism in all three patients was an extremely halophilic (salt-loving) Gram negative bacillus. It causes wound infections and otitis media, but rarely causes bacteraemia. It is famous as being the catalyst to the production of tetrodotoxin, a potent neurotoxin, in pufferfish. All 3 of the patients featured had recently spent leisure time on Sussex beaches.

163: Disseminated Aspergillus flavus infection in immunocompetent child: A case report

Dr Zoie Aiken[1,2], Dr Kirsty Dodgson[1,2], Dr Giorgio Calisti[3], Dr Thomas Fisher[4], Dr Danielle Pask[4], Dr Caroline Moore[5], Mr Ahmed Elhabal[4], Mr Shafqat Bukhari[4], Dr Frances Child[4], Dr Vivian Tang[4], Dr Tim Felton[6], Miss Fiona Lynch[3], Dr Riina Richardson[3,5,7], Dr Paddy McMaster[8], Dr Peter Arkwright[9]
[1]Department of Microbiology, Manchester University NHS Foundation Trust, Manchester, United Kingdom, [2]PHE Public Health Laboratory Manchester, Manchester, United Kingdom, [3]Department of Infectious Diseases, Manchester Foundation Trust, Manchester, United Kingdom, [4]Royal Manchester Children's Hospital, Manchester, United Kingdom, [5]Mycology Reference Centre Manchester, Manchester University NHS Foundation Trust , Manchester, United Kingdom, [6]Manchester University NHS Foundation Trust, Manchester, United Kingdom, [7]Faculty of Biology, Medicine and Health, University of Manchester, Manchester, United Kingdom, [8]Regional Infectious Diseases Unit, North Manchester General Hospital, Manchester, United Kingdom, [9]Division of Infection, Immunity & Respiratory Medicine, University of Manchester, Manchester, United Kingdom

A 6-year-old Ghanaian child, with no significant family history, was admitted to hospital after a generalised seizure. He had 6-month history of morning headaches and vomiting, poor appetite, weight loss and lethargy. A cranial CT scan showed large right parietal and cerebellar lesions and an extra-ventricular drain was inserted to relieve obstructive hydrocephalus. Further imaging demonstrated a large cavitating right lung lesion and satellite lesions in left lung and scapula. He underwent two debulking neurosurgical procedures and Aspergillus flavus was cultured from brain biopsy samples.

Intravenous amphotericin (3mg/kg/day), micafungin (8mg/kg/day) isavuconazole (range 200mg bd to 200mg od adjusted based on therapeutic drug monitoring) were used in combination for the first 3 months until drug levels stabilised, and antifungal susceptibility profiles had been fully analysed. He has subsequently been treated with oral isavuconazole and maintained good drug levels (4mg/L), with no side effects. HIV, tuberculosis, chronic granulomatous disease and other Inborn Errors of Immunity were excluded on testing, including a 430 IEI gene panel screen. Serum and CSF galactomannan and beta-D-glucan levels were used to monitor treatment response. Clinically, he has improved from having minimal head and neck control to being able to walk independently with supervision and is attending school part-time. However, serum beta-glucan (>500pg/mL) and serum galactomannan index (3.5-8.4) remain raised. Prompt surgical debridement, combination antifungals and supportive care have contained this rare fungal infection in the short - medium term, but long-term outlook remains guarded.

186: Medicines are responsible for 22% of the NHS's Carbon Footprint: How do the footprints of intravenous and oral antibiotics compare?

Dr Sarah Walpole[1,2], Minna Eii[3], Dr Catherine Aldridge[2]
[1]National Medical Director's Clinical Fellow Scheme, UK, [2]Newcastle Hospitals, UK, [3]Sunderland Hospital, UK

The NHS has committed to achieving net zero carbon emissions by 2045, which will require changes to healthcare and demands attention from clinicians. Medicines are responsible for 22% of the UK NHS's carbon footprint. Identifying lower carbon prescribing options with as good or better clinical outcomes is critical.

Carbon footprinting of medicines can be carried out using a life cycle analysis (LCA), which assesses greenhouse gas emissions (expressed in 'carbon dioxide equivalents' (CO_2e)) associated with all stages of production, use and disposal (cradle-to-grave). Carbon footprinting of the NHS supply chain has mostly been carried out through 'top-down' modelling; calculating the footprint of entire sectors. Few LCAs have been carried out for individual medications.

We selected antibiotics available as generics with equivalent IV and PO forms. In a first analysis, we used the lowest available £prices and applied a carbon intensity factor for pharmaceuticals (Tennison et al. 2021). A one-week course of amoxicillin (500mg-tds) had a footprint of 0.6kgCO_2e; for IV amoxicillin (500mg tds) one week's treatment is 6.7kgCO_2e. One week of ciprofloxacin (500mg-bd) equated to 1.4kgCO_2e; ciprofloxacin IV (400mg-bd) one week is 100.1kgCO_2e.

We further explored two other approaches to compared results: the ABPI carbon footprint calculator for blister packs and direct contact with pharmaceutical companies to request carbon footprint data.

The carbon footprint of IV antibiotics is higher than that of PO equivalents. There is a need for more transparency around, detailed analysis of and consensus on LCA approaches for the NHS to keep on trajectory towards net zero.

191: B cell depletion with rituximab associated with chronic COVID-19 pneumonitis

Dr Stuart Gallacher[1], Dr Leonard Farrugia[1], Dr Chris Davis[2], Dr Patawee Asamaphan[2], Dr Peter Garmany[1], Professor Emma Thomson[2], Dr Erica Peters[1]

[1]NHS Greater Glasgow And Clyde, Glasgow, UK, [2]MRC-University of Glasgow Centre for Virus Research, Glasgow, United Kingdom

A 47 year old woman being treated with rituximab and bendamustine for Stage IVa follicular lymphoma presented with COVID pneumonia in March 2020. CT revealed bibasal ground glass changes and nasopharyngeal swab was SARS-CoV-2 PCR-positive. She improved and was discharged but readmitted with worsening respiratory symptoms. Repeat imaging showed progressive COVID pneumonia affecting new areas of both lungs. SARS-CoV-2 was detected by PCR from broncho-alveolar lavage and blood at day 30, but upper airway samples were negative. Treatment with steroids, remdesivir, and convalescent plasma was completed on day 61 with resultant clinical and virological response.

Sequencing of the SARS-CoV-2 genome revealed a related sequence that had accumulated multiple mutations, suggestive of ongoing replication (not reinfection). SARS-CoV-2 IgG and pseudovirus neutralization were negative. IFNγ T-cell ELISpot revealed an extremely active, spike-dominant, T-cell response.

Repeat SARS-CoV-2 antibodies were persistently negative after infection. She completed a full course of SARS-CoV-2 vaccination (ChAdOx-1, AstraZeneca Ltd, UK) and was noted thereafter to have a positive antibody response against spike but not nucleoprotein around 12 months post treament with rituximab.

This case highlights an atypical presentation of chronic COVID-19 infection, mitigated by an active T-cell response with protracted detection of viable virus in non-upper airway sites in a B-cell depleted patient. Key learning points;

· Negative upper airway samples

· Antibody therapies

· Timing of vaccination

Booster studies such as the OCTAVE DUO trial in immunosuppressed patients are underway. This case demonstrates the need for a tailored approach to B-cell deficient patients with COVID-19 infection.

196: An outbreak of Serratia marcescens in critical care due to inadvertent consequences of sessional PPE use over the COVID-19 pandemic

Dr Janine Carter[1], Ms Belinda Russell[1], Dr Anu Rajgopal[1]
[1]*Calderdale And Huddersfield Nhs Trust, Halifax, UK*

Enhanced PPE use during the COVID-19 pandemic has presented infection control challenges. There are reports of an increase in the rate of catheter-related bloodstream infections (CRBSI) internationally temporally associated with the pandemic.

During the first wave of COVID-19 in the UK, Calderdale and Huddersfield NHS Foundation Trust experienced an outbreak of Serratia marcescens on ICU involving five SARS-COV-2 positive patients. There were four CRBSI's and one VAP. All isolates were indistinguishable by pulse-field gel electrophoresis suggesting cross transmission.

Contributing factors were an increase in ICU patient numbers, the redeployment of non-ICU staff who may not have been as familiar with aseptic non-touch technique used to access lines, and the sequential proning of patients on the unit with significant respiratory secretions whilst wearing sessional PPE including long sleeve gowns. Of particular concern was the practice of double gloving where staff removed the top pair of gloves and gelled the bottom pair rather than removing gloves to decontaminate hands. This was highlighted when environmental screening grew Serratia marcescens from the bottom layer of gloves of a healthcare worker.

Outbreak actions included an emphasis on hand hygiene with visual signage on ICU, wearing disposable sleeve covers and changing gowns between proning high risk patients. Double gloving was stopped. There were no further linked cases seen despite ongoing surveillance on the unit.

This outbreak highlights the importance of maintaining the basics of infection prevention and control standards despite challenges posed by changes to normal working practices as seen in response to the COVID-19 pandemic.

200: Serotype distribution and virulence characteristics of Group B Streptococcus causing colonization and invasive diseases in neonates and adults in a tertiary care hospital

Dr. Ruma Das[1], Ms. Vandana Rani[1], Dr. Rajni Gaind[1]
[1]*Vardhman Mahavir Medical College and Safdarjung Hospital, New Delhi, India*

Background:

Group B Streptococcus (GBS) is associated with maternal colonization, neonatal sepsis and adult infections. GBS serotypes vary with clinical syndromes and geographical locations. Capsular serotypes I–V are frequently observed in maternal colonization and serotype III in invasive diseases.

Objectives:

To study the pattern of serotypes, virulence genes and antibiotic susceptibility (AST) of GBS isolated from maternal colonization and invasive diseases in neonates and adults.

Material and methods:

GBS isolates (2020-2021) from various clinical samples were included. PCRs were performed for final confirmation (cfb, dlts genes), serotyping (Ia, Ib, II-VIII) and selected virulence genes. AST was performed as per CLSI guidelines.

Results:

A total of 52 GBS isolates from maternal colonization (n=9), neonates (n=20) and adults (n=23) invasive disease were included. Serotype V was most common (40.38%). Type II and type Ia were frequently isolated from neonates and adults respectively. Ten (19%) isolates were non typeable. Multiple virulence genes were detected and the most common virulent gene was bca (61.53%) followed by psp (42.30%). rib and spb1 genes were frequently observed in neonates and adult invasive disease respectively. All isolates were susceptible to penicillin. Resistance to erythromycin and clindamycin were high. Resistance to fluoroquinolones and co-trimoxazole was seen in invasive diseases in adults and neonates respectively.

Conclusion:

The study suggests that type V was the most prevalent serotype and there was no significant difference among isolates from colonization and invasive disease. Virulence genes in GBS vary between adults and neonates. This has important implication for vaccine strategies.

203: M chelonea skin infection post cosmetic surgery

Dr Grant Ridley[1], Dr Uli Schwab[1,2]
[1]*Newcastle upon Tyne Hospitals ,* [2]*Newcastle Universtiy*

43 year old immunocompetent with no past exposure to TB presented post cosmetic blepharoplasty bruising to lateral aspect of right upper eyelid and paranasal area.

Developed increased uniform thickening which progressed forming a defined lesion involving right lacrimal duct in keeping with clinical appearance of dacryocistitis with a small satellite lesion medically on the nasal bridge.

Received flucloxicillin with little effect. Progression of the lesion lead to presentation to ED, 2ml frank pus were aspirated. But not sent for culture. Reocurracne of pus lead to further aspiration. Empiracally treated with clindamycin at this point.

Cultures yielded rapid growth of mycobacteria/RGM, identified as M.Chelonae on Malditof. Sensitive to tobramycin, clarithmycin and linezolid. No evidence of dissemination or latent TB from patient, IGRA negative, ESR and chest xray were normal.

Patient treated with combination of linezolid and clarithromycin. Patient has had improvement of lesions following commencement of treatment.

There is a growing body of evidence implying M.chelonae infections following cosmetic surgery. This infection is generally localised and tends not to disseminate in immunocompetent individual. Given this increased body of evidence m.chelonae should be considered for wound infection post cosmetic surgery. However, there is normally a diagnostic delay due to failure to send appropriate cultures which were vital to the successful diagnosis of this case. Treatment is normally an extended course of dual antibiotics depending on senstivities. Although there are no agreed gudilines, macroldies are the mainstay on empirical treatment, until sensitivities are available.

204: Buccal saliva swabs as an alternative to nasopharyngeal swabs for the detection of SARS-CoV-2 RNA by RT-PCR; a verification study

Dr Alyssa Hudson[1], Dr Matthew Powell[1], Ms Malgorzata Poznalska[1], Dr Cressida Auckland[1]
[1]*Royal Devon And Exeter NHS Foundation Trust, Exeter, UK*

Background

Nasopharyngeal swabs are the gold standard sample for diagnosing of SARS-CoV-2 by RT-PCR. However, sampling may be uncomfortable, difficult to perform in children and individuals lacking mental capacity and poorly performed by self-testing.

Aim

To verify the use of buccal saliva swabs, as an alternative to nasopharyngeal swabs, for diagnosing COVID-19 in a district general hospital.

Methods

83 patients were re-tested with a buccal saliva swab within 48 hours of a nasopharyngeal swab result (31 positive; 52 negative). A total of 70 buccal saliva swabs were performed using the Oracol saliva collection system and 59 using the Cobas® uni swab. These were tested on the Perkin Elmer Light Cycler platform. Results were compared to the original result from the nasopharyngeal samples.

Results

RT-PCR failed on 4 Oracol and 3 Cobas® samples; these have been excluded from subsequent data analysis.

Oracol saliva swab results were compared to 24 positive and 42 negative nasopharyngeal swab results. Concordance was 96.97%, specificity 100.00%, sensitivity 91.67%, positive predictive value (PPV) 100.00% and negative predictive value (NPV) 95.45%. Cobas® saliva swab results were compared to 22 positive and 34 negative nasopharyngeal swab results. Concordance, specificity, sensitivity, PPV and NPV were 100%.

Conclusions

Buccal saliva swabs are a reliable sample for diagnosing SARS-CoV-2 by RT-PCR. Sampling was easy to perform and well tolerated by patients. Buccal saliva swabs have been implemented across the trust for use in paediatrics, elderly care and staff self-testing.

217: Changing epidemiology of Shiga Toxin producing E.coli (STEC) in England, the emergence of STECO26 and its impact on diagnosis of Haemolytic Uraemic Syndrome

Dr Gauri Godbole[1], Dr Claire Jenkins[1], Dr Lisa Byrne[1]
[1]*Gastrointestinal Pathogens, Public Health England, Colindale, United Kingdom*

Background: Shiga toxin producing E.coli (STEC) are zoonotic pathogens, cases present frequently with diarrhoea or haemorrhagic colitis, rarely progressing to haemolytic uraemic syndrome (HUS). STECO157 has been the predominant serogroup in England for several decades. Diagnostic laboratories in England with or without enteric PCR tests are currently able to culture only STECO157. A recent national audit showed only 17% cases of HUS are notified, STEC- HUS cases are often misdiagnosed as atypical HUS. There are 3-4 missed HUS deaths/ year. The purpose of this presentation is to raise awareness about nonO157STEC amongst clinicians.

Methods and Results: Enhanced public health surveillance of cases using questionnaires and mandatory laboratory reporting across England has shown a 3-fold increase in cases of STEC nonO157 from 2015 to 2020, probably due to increased use of enteric PCR. STECO26 is the main emerging serogroup causing severe infection, hospitalisations (9% cases of STECO26 progress to HUS vs 3% with STECO157) and outbreaks. Meanwhile the number of cases of STECO157 have reduced by upto 40%.

Further steps and conclusion: The national epidemiology of STEC has changed and cases of HUS caused by STECO26 in England have increased. This maybe due to strain replacement or acquisition of virulence genes in STEC in the animal reservoir. The reference laboratory has validated a new chromogenic agar to enable detection of both O157 and non O157 strains, which can be used in conjunction with O26 antiserum to identify STECO26. Public health teams have been advised to undertake enhanced surveillance of STECO26 cases.

234: Local antimicrobial therapy for fracture-related infection: does it reduce infection recurrence?

Dr. Maria Dudareva[1], Dr. Ruth Corrigan[1], Dr. Jonathan Sliepen[3], Dr. Rob Rentenaar[2], Dr. Falco Hietbrink[2], Dr. Frank Ijpma[2], Dr. Bridget Atkins[1], Dr. Geertje Govaert[2], Professor Martin McNally[1], Dr. Marjan Wouthuyzen-Bakker[3]

[1]Oxford University Hospitals, Oxford, United Kingdom, [2]Universitair Medisch Centrum Utrecht, Utrecht, Netherlands, [3]University of Groeningen, Groeningen, Netherlands

Aims:

Antibiotics may be implanted directly into bone at the time of debridement surgery for orthopaedic infections. We aimed to ascertain the possible benefit of this aspect of surgical therapy for fracture-related infections (FRI).

Method:

A retrospective observational cohort study in three European specialist orthopaedic centres identified 433 people receiving surgical treatment for FRI between 2014 and 2020, who were followed up for at least 12 months. Infection-free survival, ascertained blinded to treatment, was compared using adjusted and unadjusted Cox proportional hazards and logistic regression modelling for infection recurrence at 12 and 24 months. Inverse Probability of Treatment Weighting (IPTW) was used to account for confounding in the causal pathway between surgical treatment and infection recurrence.

Results:

216 people received bioabsorbable local antibiotic therapy and 36 people received non-bioabsorbable local antibiotic therapy as part of surgical treatment for FRI. FRI recurrence was identified for 25/252 (10%) of those who received local antibiotic therapy and 34/181 (19%) of those who did not. Cohort participants who received local antibiotic therapy had, on average, longer pre-operative symptom duration than those who did not. The IPTW adjusted hazard ratio for FRI recurrence was 0.56 (95% confidence interval 0.26 to 1.17), with consistent treatment effects at 12 and 24 months.

Conclusion:

Local antibiotic therapy is associated with reduced FRI recurrence after treatment, and should be considered as part of a comprehensive treatment strategy for Fracture-Related Infection.

Free paper poster presentations

4: Early Palliation of a Case of Canine Rabies Encephalitis in a Well-Resourced Setting

Dr Susanne Hodgson[1,2], Dr David Bonsall[1,2], Dr Shelia Lumley[1,2], Dr Charles Woodrow[1,2], Dr Hanif Esmail[1,2], Dr Monique Andersson[1,2], Professor Christopher Conlon[1,2], Dr Andrew Brent[1,2]
[1]University Of Oxford, , United Kingdom, [2]Oxford University Hospitals NHS Foundation Trust, , United Kingdom

A 58-year-old man, unvaccinated against rabies, sustained a deep cat-bite to his right 4th finger in Mekenes, Morocco. The bite was from a cat that had 'gone berserk' and bitten multiple people. Directly after the bite, the patient received antibiotics and an 'injection.'
35-days post-bite (D35), the Moroccan Public Health Authority informed the patient that a child bitten by the same cat had died of rabies. On attending his local hospital (D36) the patient was initially told he was not at risk of rabies. Following GP review, PEP with RIG and a 4-dose vaccine regimen was started (D42).
The patient developed pain, paraesthesia and fasciculations at the bite-site (D58) and on the third presentation to primary care services was referred to the same local hospital A&E (D61). PHE were informed of a presumptive diagnosis of rabies on D62. He was transferred to the regional Infectious Diseases unit (D63) where he was hydrophobic, aerophobic and ataxic with widespread fasiculations across the right upper limb and chest. Overnight he became agitated and delirious which improved with subcutaneous morphine.
Following discussion with the patient's family, wider Infectious Diseases team, Critical Care, Palliative Care and PHE, a palliative approach was adopted within 12-hours of admission. The patient died 2-days later (D65) sedated and comfortable. A diagnosis of canine rabies was confirmed 1-day post-mortem from nuchal-biopsy and saliva samples.
Given extremely limited success with the Milwaukee protocol to-date and severe neurological disabilities in survivors we propose well-resourced settings consider early palliation of canine rabies encephalopathy.

5: Epstein-Barr virus (EBV) induced pneumonitis in an immunocompetent adult

Dr Amir Hayat[1], Dr Tiria Lehoczky[1]
[1]*Darent Valley Hospital, Dartford, United Kingdom*

Presentation: A 39 year old male patient presented with fever, worsening shortness of breath and non-productive cough.
Background: Malaria 2009 and SARS-CoV-2 PCR test positive in December 2020
Initial Assessment: Type 1 respiratory failure on arterial blood gas. Vitals revealed respiratory rate of 24 per minute, heart rate 111 per minute, temperature 38.9'C and Oxygen saturation of 84% on room air. Oxygenation started immediately. Urgent chest X-ray showed multifocal consolidation at lung bases.
Examination: Febrile. Crepitations at both lung bases. Rest of systemic examination was fine
Investigation: Hi sensitivity C-reactive protein 50.5mg/L, White cell count 26.3*10^9/L, D-dimers 1202ng/ml, Procalcitonin 2.78ng/ml , Ferritin 5190ug/L, Negative Cytomegalovirus serology, Epstein-barr virus(EBV)-IgM detected, Negative anti-HIV 1&2 + p24, Negative Legionella antigen ,Negative Pneumococcal urinary antigen test , Negative Mycoplasma serology, Negative IGRA-TB test , Negative Hepatitis serology and Negative SARS-Cov-2 PCR test.
Imaging: Computed Tomography Angiogram Pulmonary normal but reported extensive bilateral pulmonary infiltrates. Normal echocardiography.
Course of Management: Initially treated with intravenous antibiotics, steroids and anticoagulation. After EBV result, he was treated for EBV pneumonitis. Serial arterial blood gases done. Upon further desaturation, he was transferred to intensive care unit where he was given non-invasive ventilation, Continuous positive airway pressure. Upon stabilization, CT Thorax with contrast showed significant improvement in lung infiltrates.
Outcome: He responded to the management and sent home after recovery. EBV IgM negative upon discharge.
Follow-up: His General Practitioner was requested to repeat chest x-ray after 6 weeks according to the protocol to know the status of bilateral lung shadows.

6: Increasing Ethnic Diversity in COVID Vaccine research Trials

Dr Thomas Harrison[1], Ms Evie Chandler[2], Dr Thomas Darton[3]
[1]Sheffield Teaching Hospitals, Sheffield, , [2]National institute for health research , Sheffield, , [3]University of Sheffield, Sheffield,

People from ethnic minorities are disproportionately affected by COVID-19. Despite this ethnic minorities are underrepresented in clinical trials. The NIHR has also established a Race Equality Public Action Group to better understand and advise on these issues.
A team in Yorkshire conducted two focus groups of 9 people from ethnic minority groups (Asin and Black). Participants prepared for the session by reading a Patient information sheet (PIS) from the Oxford/AstraZeneca Covid Vaccine trial. Questions were initially based on their response to the PIS, then to broader questions about promoting ethnic minority inclusion in research.
These focus groups clearly called for vaccine research PIS' that are more readable, shorter and with less scientific language. This reflects previous literature across multiple research fields stating that although PIS should be aimed at a reading age of 11-12 years. Translation of written information was strongly called for, and for translation services consistently applied at clinic visits.
Researcher engagement through social media presence with clear vaccine information has been called for to improve community knowledge of vaccines and to counter misinformation that can so quickly spread online. The use of patient advocates and peer to peer encouragement was voiced as important in encouraging ethnic minority groups to be recruited to vaccine research.
This has informed local efforts to encourage increased diversity in research, which include the development of a Sheffield research website, local research champions from minority groups and educational webinars.

10: Use of Gentamicin in Yorkshire and the Humber: Current processes and Opportunities for Improvement

Mr Kevin Frost[1]

[1]*Airedale NHS Foundation Trust, Keighley, United Kingdom*

Background

Gentamicin is a common "Access" category antibiotic1 that requires dose adjustment and therapeutic drug monitoring for safe use2. In 2007, the Yorkshire and Humber Antimicrobial Pharmacists' network collaborated on a regional approach to gentamicin prescribing. This led to the development of a regional paper prescription and administration chart based upon the Hartford regimen3. In the interim many Trusts have moved from paper to electronic prescribing systems with different approaches to Gentamicin.

Objective

This audit evaluated processes across the 13 Trusts in the regional pharmacist network to identify common areas for collaborative quality improvement work

Method

Antimicrobial pharmacists were asked to forward local gentamicin guidelines to the author to compare processes between different Trusts. These included standalone policies and charts used to prescribe, administer and monitor gentamicin. The outputs of this review were verified by the contributors by e-mail and a virtual meeting.

Results

11 Trusts provided feedback of which 1 Trust did not routinely use gentamicin. For the remaining 10 Trusts, the differences in practice were identified and a process map for gentamicin prescribing, administration and monitoring was developed. The most significant difference in process was that 8 different EPMA solutions in use between the 10 Trusts.

Conclusions

Gentamicin processes remain broadly similar, although the different EPMA systems in use limit the opportunity for single prescription chart as before. Antimicrobial pharmacists will now be asked to review the steps of the identified gentamicin process map for collaborative work to improve the prescribing, administration or monitoring of this important antibiotic.

11: Infant Twin with Disseminated (Pulmonary, Intra-abdominal and CNS) Tuberculosis

Dr Georgina Appleyard[1], Dr Omar Rahama[1], Dr Eduardo Moya[1], Dr Suleman Hasnie[1]
[1]*Bradford Teaching Hospitals NHS Foundation Trust, Bradford, UK*

Paediatric TB:
In the UK, 169 paediatric cases of TB were reported in 2019, a rate of 1.7 per 100,000 and the first annual increase since 2012. 13 cases (7.7%) had severe disease (CNS or miliary TB) and only seven (4.1%) of these had CNS-meningitis with only one aged 0-4 years (0.6%).(1)

Presentation:
We present a 4-month-old ex-premature (33+5) infant, UK-born IVF twin who presented with respiratory distress, he was initially managed as LRTI and discharged on erythromycin.
He re-presented 9 days later with increased work of breathing, wheeze and hypoxia with respiratory acidosis requiring high-flow nasal cannula oxygen (vapotherm). He had static growth and weight below 0.4th centile.

Investigations:
CXR showed bilateral consolidation, right lower lobe collapse with effusion and hilar lymphadenopathy.
US abdomen showed para-aortic lymphadenopathy with calcified foci.
MRI brain was concerning for tuberculomas.
Bronchial washout was culture positive for MTB; CSF was negative.
HIV test was negative.
Mother is QuantiFERON positive but has no clinical or imaging evidence of active TB.

Management:
He was commenced on standard TB quadruple therapy for 12 months and dexamethasone. He improved clinically with treatment and gained weight.
His twin, admitted to the regional respiratory HDU, was also diagnosed with TB.

Summary:
We present a successfully treated paediatric case of serious, disseminated TB with CNS involvement. TB in young children is usually acquired from close family contacts within the home. In our case, no immediate family members with active disease were identified; they were referred to TB clinic for further assessment.

12: Extensive Pulmonary Tuberculosis in a 12-year-old girl

Dr Georgina Appleyard[1], Dr Omar Rahama[1], Dr Eduardo Moya[1], Dr Sulman Hasnie[1]
[1]*Bradford Teaching Hospitals Nhs Foundation Trust, ,*

Paediatric TB:
Globally, children younger than 15 years old represented 12% of the 10 million incident cases of tuberculosis (TB) reported in 2019 and 4% of 52,862 European cases in 2018(1,2).
In 2019, 169 incident cases of TB in children under 15 were reported in the UK, an annual rate increase from 1.5 to 1.7 per 100,000 compared to 2018(3).

Presentation:
We present a 12-year-old girl born in Bradford, UK, with past history of anaemia and low vitamin D; BCG inoculated. She presented with 4 months of productive cough and constitutional symptoms (her weight dropped from 34th to 4th centile).
She had a known TB contact (uncle) who was already established on therapy. Her mother had no symptoms and a normal CXR but QuantiFERON was positive.
On admission, she looked ill, febrile and had evidence of clubbing.

Investigations:
CXR showed extensive bilateral changes with consolidation and cavitation, later confirmed on CT.
Sputum culture was positive for mycobacterium tuberculosis.
Hb 77.
HIV screen was negative.

Management:
She was commenced on standard quadruple therapy for TB, transfused to stabilize her condition and given nutritional supplements.
On follow up, she showed good clinical response to the therapy and started to gain weight.

Learning points:
- children are usually infected from close contacts within the home environment.
- early identification of index cases and treatment, prevent onward infection.
- it's important to educate patients about the risk of infection to close contacts at the time of diagnosis and advice about appropriate infection control measures.

13: An update on evolving spinal infections in the current climate of emerging antimicrobial resistance

Dr Iresha Asanthi Munasinghe Arachchige[1], Dr Vinesh Sivaneswaran[1], Dr Krishna Banavathi[1], Dr Seema Desai[1]

[1]*Royal Stoke University Hospital, Stoke on Trent, United Kingdom*

Spinal infections continue to pose challenge despite the mitigation approaches including multidisciplinary discussions. Spinal infections are usually caused by the haematogenous spread to the disc from a distant source but post-operative (PO) infections remains a concern and are associated with high morbidity. Our study aims to summarise the pathogens involved in native and PO spinal infections in order to steer antimicrobial stewardship (AMS) practices to improve outcomes. Patients from single centre with diagnosis of native vertebral osteomyelitis (NVO) and PO spinal infections were identified between July-2018 to December-2019 in retrospective design. Seventy two patients were identified with 82% and 18% in NVO and PO spinal infections respectively. 69% patients with NVO had a pathogen isolated with S.aureus being the predominant pathogen and accounts for 63% of all pathogens isolated. In PO spinal infection, S.aureus was isolated in 38.4% cases whereas 46% were gram negatives along with other pathogens. Of all pathogens isolated, 8% of gram negatives were identified to be multi drug resistant which signals the impending threat of rising resistance. AMS is required to reduce morbidity, shorten hospital stay and avoid revision surgeries. Although, the NVO aetiology has not shifted but in the PO infections, rising gram negatives and emerging resistance poses threat on choices of empirical antimicrobial therapy. This study has limitations of small sample size but provide evidence that empirical antibiotic choices need review in different settings based on the local antimicrobial resistance data.

15: Impact of Germicidal Light used for Augmenting Surface Disinfection: Summary of the Experience of 50 U.S. Hospitals.

Dr. Mark Stibich, PhD FIDSA[1], Dr. Sarah Simmons, DrPH, FAPIC[1]
[1]*Xenex, Santa Fe, USA*

Abstract
Background: The role of the environment in hospital acquired infections is well established. We examined the impact on the infection rate of Clostridioides difficile of an environmental hygiene intervention in 50 hospitals over a 5-year period using a pulsed xenon ultraviolet (PX-UV) disinfection system.

Methods: Utilization data was collected directly from the automated PX-UV system and uploaded in real time to a database. C. difficile infection data was provided by each facility. Data was analyzed at the unit level to determine compliance to disinfection protocols. Final data set included 5 years of data aggregated to the facility level, resulting in a dataset of 50 hospitals and a date range of Jan 2015 – December 2019. Negative binomial regression was used with an offset on patient days to convert infection count data and assess C. difficile infection rates vs. intervention compliance rate, total successful disinfection cycles, and total rooms disinfected. The K-Nearest Neighbor (KNN) machine learning algorithm was used to compare intervention compliance and total intervention cycles to presence of infection.

Results: All regression models depict a statistically significant inverse association between the intervention and C. difficile infection rate. The KNN model predicts the presence of infection (or whether an infection will be present or not) with greater than 98% accuracy when considering both intervention compliance and total intervention cycles.
Conclusions: The findings of this study indicate a strong inverse relationship between the utilization of the pulsed xenon intervention and C. difficile infection rates.

16: The Clinical Utility of Superficial Wound Swabs Taken from Inpatients at Royal Preston Hospital

Miss Maram Nabahin[1], Dr Robert John Shorten[2]

[1]*University Of Manchester Medical School,* [2]*Lancashire Teaching Hospitals NHS Foundation Trust, Department of Microbiology*

Inappropriate bacterial culture and reporting of antimicrobial susceptibilities is associated with increased antimicrobial prescribing. Inappropriate use of antimicrobials is associated with side effects, including healthcare-associated infections such as Clostridioides difficile infection and the emergence of antimicrobial resistance (AMR). Interpreting culture results from non-sterile specimens requires clinical context and this is usually by accompanying clinical details provided by requesting clinicians, and swabs should only be submitted if there is evidence of infection. 200 superficial wound swabs from inpatients were reviewed to assess the clinical details provided by the requester, the organisms isolated, whether the result was documented in the patient's notes, and if there was a resulting change in antimicrobial prescribing. 59/200 (29%) of swabs were accompanied by no clinical details. A further 25/200 (12.5%) provided unhelpful or unrelated clinical information. Clinical management was changed in 70/200 (35%) of patients when culture results were available. Overall over 40% of all swabs received were accompanied by no, or unhelpful clinical details. Anecdotal evidence suggests that swabs, in particular from ulcers, are taken when there is no evidence of infection. Processing inappropriate swabs has financial, environmental, and antimicrobial stewardship implications which need to be addressed. Various strategies are under consideration.

17: Indications for central venous line access for treating infections and the appropriateness of the antimicrobial therapy: A Clinical Audit

Miss Kimberly Shea Tin Chong[1], Dr Robert John Shorten[2]

[1]University Of Manchester Medical Schooll, [2]Lancashire Teaching Hospitals NHS Foundation Trust, Department of Microbiology

Central venous access devices (CVADs) are used to deliver medications, including antibiotics. CVAD requests should be monitored closely due to the risks associated with insertion and the potential complications of venous thromboembolism and line-associated bloodstream infections. Inappropriate antibiotic use is associated with side effects, including healthcare-associated infections such as Clostridioides difficile infection and the emergence of antimicrobial resistance. An audit was performed to investigate the appropriateness of requests for CVAD insertion and the antimicrobials prescribed. 52 patient records were analysed over a one month period. There was good evidence of infection requiring IV antibiotics in 49/52 cases. Antibiotic selection was in line with guidelines in 71.4% of cases, and the vast majority of the exceptions had been discussed with a microbiologist. Good compliance was seen with guidelines for requesting CVAD access, but poor online documentation meant that it was not possible to confirm this in all cases. Despite some minor anomalies detected in this small patient size, there was an overall prominent demonstration of proficiency in clinical judgement by the central venous access team and microbiology team. The CVAD requests made by the clinical teams had definite indications and were predominantly appropriate. This highlights the importance of a multidisciplinary approach, particularly the microbiologist, when considering antimicrobial therapy via CVAD, in view of the risks associated with antibiotic misuse. In addition, patients undergoing CVAD placement should be closely monitored and thus online record-keeping and documentation should be better improved to ensure quality healthcare practice and patient safety.

20: Comparing AKI rates following short-course or long-course gentamicin or piperacillin-tazobactam.

Mr Kevin James Frost[1]

[1]*Airedale NHS Foundation Trust, Keighley, United Kingdom*

Gentamicin is an important antibiotic in UK hospital practice. Concerns about nephrotoxicity have led to a BNF recommendation of a maximum of 7 days treatment without microbiology specialist input. However, other clinical factors including sepsis can lead to acute kidney injury (AKI) independent of gentamicin use.

A retrospective review of 3.5 years of medicines administration data and serum creatinine data to identify the relative incidence of AKI following a short (0-7 days) or long (>7 days) course of Hartford-style 7mg/kg gentamicin. Piperacillin-tazobactam, as another antibiotic used commonly for severe infections in UK practice, was used as a comparator.

Within 28 days of initiation, there were 162/3178 (5.1%) and 261/5462 (4.8%) cases of AKI following gentamicin and piperacillin-tazobactam respectively. Courses of gentamicin greater than 7 days were significantly more likely to cause AKI than gentamicin courses less than 7 days (12/47 (26%) vs 35/3063 (1.1%), p <0.001, relative risk 28% (95% confidence 8%-51%). Courses of gentamicin greater than 7 days were significantly more likely to cause AKI than piperacillin-tazobactam courses greater than 7 days (12/47 (26%) vs 39/462 (8.4%), p<0.001, relative risk 23% (95% 5-47%). Short course (<=7 days) gentamicin was not significantly associated with greater incidence of AKI compared to short course piperacillin-tazobactam (p =0.16).

This finding supports the maximum of 7 days treatment for Hartford-style gentamicin courses. To ensure that gentamicin is managed safely and continues to be available for the management of gram-negative infections, further studies to identify optimal dosing regimen are required.

21: Primary versus delayed primary skin closure for prevention of surgical site infections in contaminated abdominal surgery: A meta-analysis of randomized controlled trials.

Mr. Almegdad Ahmed[1], Mr Ali Ahmed[1], **Mr. Basil Ibrahim[1]**, Mr. Mohammed Adam[1], Mr. Ali Mohamedahmed[2], Mr. Omer Salim[1]

[1]University of Khartoum, Khartoum, Sudan, [2]Sandwell and West Birmingham Hospitals NHS trust, Birmingham, United Kingdom

Surgical site infections (SSIs) are one of the most common hospital acquired infections. Delayed primary skin closure (DPC) is a technique that can be used when there is a contaminated or dirty wound. The purpose of this study was to evaluate the effectiveness of DPC in reducing SSIs in dirty and contaminated abdominal surgeries compared to primary skin closure (PC). An electronic search was conducted using six databases and clinical trials registers, only randomized controlled trials (RCTs) were included. selection of the included studies and data extraction were conducted by more than one reviewer independently. Pooling of the data was performed for surgical site infections as a primary outcome, and the length of hospital stay. 12 RCTs were included in the final analysis, including 1456 patients that were randomized to receive either PC or DPC. Pooling of the data using random effect model favored DPC over PC in reducing the risk for SSI with a risk ratio of 0.59 [95% CI:0.32, 1.08], however the difference between the groups was not significant (p value= 0.09). A sensitivity analysis was performed after excluding six studies, and the results also favored the DPC with statistically significant difference between the two groups (p value < 0.009), however with lower risk ratio, 0.28 [95% CI:0.11, 0.73] .The length of hospital stay was slightly lower in the PC group with a mean difference of 0.25(95% CI:0.02,0.48) days from DPC group. We conclude that DPC might be more effective than PC in reducing the risk of SSIs.

24: Isolation and susceptibility pattern of bacteria from various source of water in 4 tertiary institution in Niger state, Nigeria

Miss Odinaka Joy Agba, **Mrs Uche Mary Oyedum**[1]

[1]*Federal University Of Technology, ,*

Water is one of the components needed to stay alive and its importance cannot be overemphasized. Ten (10) Water samples were collected from different hostels of various institutions and were analysed for bacterial load. The sample were aseptically collected and transported to the Microbiology Laboratory of Federal University of Technology Minna. The samples collected were inoculated on various media via pour plate method. Bacterial isolates were identified by their Gram's reaction and other biochemical tests. The isolated bacteria were further subjected to antibiotic susceptibility test using the disc diffusion method with Muller Hinton agar. The result revealed that Escherichia coli and Pseudomonas aeruginosa had the highest frequency of occurrence (30%), followed by Shigella dysentriae and Salmonella typhi with 20% frequency of occurrence. Hundred percent (100%) resistance was exhibited by Pseudomonas aeruginosa, Shigella dysentriae and Salmonella typhi to Augmentin, Amoxicillin, Gentamicin, and Septrin respectively. The presence of these resistant bacteria in these water sources is a great treat to the general public especially tertiary student in Niger State, Nigeria. There is therefore a need for continuous examination of the water source to ensure that water contained in these water sources are potable and safe for consumption.

Keywords: Institutions; Water; Resistant bacteria; Antibiotics

26: Mycotic aneurysm on a background of recurrent Streptococcus pneumoniae infection - A MDT approach to complex vascular infection.

Dr Jing Yi Kwan[1], Dr Sulman Hasnie[1], Dr Harry Bardgett[1], Dr Paul McWhinney[1], Dr Alina Negut[1]
[1]*Bradford Teaching Hospitals NHS Foundation Trust*

Introduction: Mycotic aneurysms are rare aneurysms resulting from an infectious process involving the arterial wall. Streptococcus species are common causative pathogens.

Mycotic aneurysms are often associated with complications such as rupture, with significant morbidity and mortality. Treatment involves a prolonged course of parenteral antimicrobial therapy and aggressive source control. A microbiological diagnosis of infection and timeliness of surgical intervention are crucial to clinical cure of infection.

Case Description: A 65-year-old female was admitted to Airedale General Hospital with back pain and weakness. She had a past medical history of discitis and spinal abscess requiring laminectomy three years prior to this admission. Tissue cultures then grew Streptococcus pneumoniae. A full course of antibiotics was given. On this admission, admission blood culture again flagged positive with Streptococcus pneumoniae. A magnetic resonance imaging scan of the spine revealed a 25mm mycotic iliac aneurysm and the patient was transferred to the vascular department at Bradford Royal Infirmary. She remained systematically well and her only symptom was back pain.
The patient was treated with 6 weeks of IV Teicoplanin before having a repair of the iliac aneurysm with an iliac artery graft. Pneumococcal PCR was positive on the tissue sample collected during surgery. IV Teicoplanin was continued postoperatively for 6 weeks with good clinical and biochemical response.

Conclusion: A multidisciplinary team approach is essential in complex vascular infections to provide optimal patient outcome. It is sometimes difficult to differentiate between reinfection or relapse, but the prolonged time interval between both presentations makes reinfection more likely.

27: Improving diagnosis: evaluating the prevalence of infectious disease in Southeast Asia and Zimbabwe as part of a diagnostic evaluation study using gene-expression signatures.

Dr Farah Shahi[1], Dr Nikki Smith[1], Dr Thomas Darton[1]
[1]*University Of Sheffield*

Acute Undifferentiated Febrile Illness (AUFI) is a global clinical challenge, associated with a 12.2% inpatient mortality rate for infection-related fever in low- and middle-income countries (LMICs). A variety of pathogens can result in a similar picture of fever without an infective focus. Traditional laboratory methods of antibody assays and culture are often unsatisfactory. Accurate diagnosis is paramount to avoid indiscriminate antimicrobial usage and prevent mortality. Recent approaches to AUFI include the use of biomarkers and host gene-expression signatures for diagnosis. As part of a multi-site diagnostic evaluation study, we will use emerging technologies to diagnose enteric fever (EF). We aim to evaluate the common aetiologies of fever in Southeast Asia/Zimbabwe; explore the use of gene-expression signatures for the diagnosis and differentiation of EF from other causes of fever, and assess the relationship between clinical severity indicators, biomarkers and diagnosis. Here we present an evaluation of the current epidemiological understanding of infectious diseases in Southeast Asia and Zimbabwe from existing studies, along with the best approach to a diagnostic algorithm at our 2 sites: India, Indonesia. This is crucial to ensuring we can accurately evaluate gene signatures discovered in previous work differentiating EF from other causes of fever. Predominant causes in India and Indonesia are dengue, scrub typhus, malaria, leptospirosis and EF. Prevalence varies by region and season. Currently available diagnostics remain inadequate. A combined clinical and laboratory algorithmic approach may be required. Over the next 2 years we will collect PAXgene® samples for RNA-seq analysis.

28: Identification and management of complicated septic arthritis

Dr Seema Desai[1], Dr Gareth Byrne[1]

[1]*University Hospitals North Midlands, Newcastle Under Lyme, United Kingdom*

Septic arthritis is a serious and potentially life threatening illness usually treated with surgical joint wash out and antibiotics. However, some cases are more complicated and require supplementary treatment, potentially due to intracellular pathogens, loculated collections or immunocompromisation of the host. Current literature is unable to identify accurate predictors for which patient's pathology may be refractory to traditional treatment. Data was retrospectively collected at the Royal Stoke Hospital for all patients diagnosed with native large joint septic arthritis in a 12 month period with an aim to identify these complicated patients and recognise possible reasons for their more problematic management. Information collected included basic demographics, joint aspirate culture result, blood culture result, number of washouts and co-morbidities. Results demonstrated staphylococcus aureus to be the most common causative organism but streptococcal septic arthritis, while less common, often requires repeated washouts. The knee was the most commonly affected joint, however infection of the shoulder often led to repeated washouts. 20% of patients did not have blood cultures performed despite being a standard investigation for this condition, and 50% of cultures that were done were negative. This study has reaffirmed the need for empirical antibiotics to target staphylococcus aureus, prompted changes in local antibiotic management for streptococcal septic arthritis and highlighted the need for PCR methodology alongside culture techniques to rapidly and accurately identify organisms.

29: Survey to Document the Range of Medicines Used in OPAT Services in the West Midlands (WM)

Doctor Abi Jenkins[1], **Mr Shahzad Razaq[1]**, on behalf of the West Midlands Antimicrobial Pharmacist Group

[1]*University Hospitals Birmingham, Birmingham, UK*

Introduction

The WMAPG has representatives from 14 Trusts in the WM. Locally OPAT services have developed in response to demand, geography, resource and funding. Differences include the number and duration of face-to-face daily contacts that care givers have with patients this places limitations on the choice of antibiotic which can feasibly be administered in the time available. The purpose of this landscape survey was to document the antimicrobials and administration methods used in the WM OPAT services 2019-21.

Method

A survey was circulated via an electronic platform via which responses were submitted and analysed.

Results

Fourteen responses were received, eleven from secondary care Trusts, two specialist Trusts and one community trust. Two secondary care Trusts do not have an OPAT service whilst one secondary care Trust and the Community Trust provide a joint service. Two services offer contact four times a day with three and twice times daily contact offered by four services each. One OPAT team provided a once daily service.

Of the eight medicines most frequently reported, six are administered once daily whilst two are administered three times a day. From eleven rservices, six reported use of elastomeric infusers for infusion of; benzylpenicillin (n=2), flucloaxacilllin (n=4) and piperacillin-tazobactam (n=6).

Conclusions

There is a considerable diversity in the antimicrobials utilised by WM OPAT services, as such there is local knowledge and potential to expand access where appropriate. Collaborative working and sharing knowledge should be used to support pharmacists and further develop services across the WM.

30: Survey to Document Pharmacist Involvement of OPAT Services in the West Midlands (WM)

Doctor Abi Jenkins[1], **Mr Jonathan Snape[2]**, on behalf of the West Midlands Antimicrobial Pharmacist Group

[1]University Hospitals Birmingham, Birmingham, UK, [2]University Hospitals North Midlands, Stoke-on-Trent, UK

Introduction

BSAC OPAT Good Practice Recommendations (GPRs) require inclusion of an antimicrobial pharmacist in the clinical team. They report improved patient care on addition of a pharmacist to OPAT team, recommending 0.25 whole time equivalent (wte) pharmacist input per 100 patient episodes. WMAG has representatives from 14 OPAT provider organisations including Community, Acute and Specialist Trusts. The purpose of this baseline survey was to document the current pharmacy commitment to the region's OPAT services in 2021.

Method

A survey of 13 questions was circulated via an electronic platform via which responses were submitted and subsequently analysed.

Results

Fourteen responses were received, eleven from secondary care Trusts, two specialist Trusts and one community trust. Two secondary care Trusts don't have an OPAT service whilst one secondary care Trust and the Community Trust provide a joint service. Responses were received from eleven OPAT services with ten reporting regular pharmacist involvement.

All ten pharmacists attend multidisciplinary clinical review and provide medicines information (MI) advice to the team. Other pharmacist services offered include: order and supply of antimicrobials (n=8), prescribing (n=6), audit and data collection (n=5) and pharmacist-led clinics (n=2).

Conclusions

Considerable variation exists in OPAT service size, pharmacist hours and involvement across WM. Pharmacists are present in 10/11 OPAT services, with involvement in clinical review and MI advice. Involvement in other services is variable. Next steps are to undertake the comprehensive BSAC OPAT GPRs audit in 2022 measuring these services against the recommendation of 0.25 wte pharmacists per 100 patient episodes.

32: Review of the National Usage of Antibiotics in Arthroplasty Surgery – Should antibiotic prophylaxis be Standardised?

Mr Hadi Hassanzadeh[1], Mr Ashley Ferro[1], Dr Katherine Woods[1], Mr Tobias Baring[1]
[1]*Homerton University Hospital NHS Foundation Trust , London, United Kingdom*

Background

Surgical Site Infection (SSI), and more specifically Periprosthetic Joint Infection (PJI), remains one of the most serious complications of arthroplasty surgery. Antibiotic prophylaxis reduces PJI and associated morbidity. There is currently no national or international guideline on which antimicrobial agent should be used in primary elective arthroplasty.

Aim

This descriptive study aimed to compare the current first-line antibiotic recommendations across hospitals in England, Scotland, Wales, Northern Ireland, and The Republic of Ireland for elective arthroplasty procedures. Both the NHS and private sector were included.

Methods

The MicroGuide mobile phone application was used to access NHS Trust/Hospital antibiotic guidelines. First line antibiotic recommendation and dosing regimen for primary elective arthroplasties were recorded.

Results

A total of 9 distinct antibiotic regimens were identified through our search. The most frequently used 1st line antibiotic was Cefuroxime. This was recommended by 49 of the 124 (40%) hospitals in the study. This was followed by a combination of Flucloxacillin and Gentamicin used by 38/124 (31%) hospitals. The dosing recommendations were also recorded, identifying significant heterogeneity even within the same antibiotic recommendation between trusts. Some hospitals are recommending prophylactic antibiotics up to 24-hours postoperatively, which is no longer recommended internationally and should be reviewed.

Conclusion

This study has highlighted the need for the development of national guidance on choice and dose of prophylactic antibiotic use in arthroplasty procedures in order to standardise the care for arthroplasty patients.

33: Bacterial co-infection and prescribing trends in SARS- CoV-2 infection in two United Kingdom Hospitals

Dr Penelope Teoh[1], Dr Irfaan Maan[1], Dr Absioye Akintimehin[1], Dr Ashleigh Draper[1], Dr Steven Gilbert[1], Dr Georgina Lennon-Butler[1], Dr Fong Yee Liu[1], Dr Unoma Nonye Okoli[1], Dr Amit Rajani[1], Dr Phoebe Scarfield[1], Dr Jessica Snaas[1], Dr Juliet Uwagwu[1], Dr Anand Odedra[1]
[1]*Lewisham and Greenwich NHS Trust*

Objective

To describe antibiotic prescribing and early bacterial co-infection in patients admitted to two London hospitals with COVID-19.

Method

Retrospective review of adults with polymerase chain reaction confirmed SARS-CoV-2 infection admitted between 9th February and 10th May 2020. Demographics, critical care unit (CCU) admission, antibiotic prescribing and microbiology results within 10 days of COVID-19 diagnosis were analysed.

Results

1155 patients were identified. 32.9% (380) died during admission. 15% (173) had positive microbiology. After excluding likely contaminants, 8.5% (98) had evidence of co-infection. Blood-stream organisms most commonly found were Escherichia coli 9.9% (7), Klebsiella pneumoniae 4.2% (3), and methicillin-sensitive Staphylococcus aureus 2.8% (2). Organisms isolated from lower respiratory tract samples included Candida albicans 23.1% (9), Staphylococcus aureus 15.8% (6), Klebsiella spp 15.8% (6), Escherichia coli 10.3% (4) and Pseudomonas aeruginosa 10.3% (4). Legionella and pneumococcal urinary antigen tests were positive in 0/117 and 2/71 tests respectively. Patients admitted to CCU were more likely to have positive microbiology (34.95% vs 12.92%, $p<0.001$). 1051(91%) of all patients received antibiotics. Clarithromycin (24.2% total antibiotic use) and amoxicillin (21%) were most frequently used, followed by piperacillin-tazobactam (12.6%), gentamicin (10.6%), co-amoxiclav (9.3%) and meropenem (3.2%). Patients given piperacillin-tazobactam or meropenem had a higher length of stay and mortality.

Conclusion

Bacterial co-infection in COVID-19 is uncommon, but more frequent in patients requiring CCU admission. Antibiotic use was widespread, despite lack of microbiological evidence of bacterial co-infection. When present, infection was more likely due to gram negative organisms. Future local clinical and antimicrobial guidelines should reflect these findings.

35: The pitfalls and perils of measuring HAI impact - what works best?

Ms Sally Stewart[1], Professor Jacqui Reilly[1], Dr Lynne Haahr[1]
[1]*Glasgow Caledonian University, Glasgow, United Kingdom*

Background: Evaluating the impact of HAI is crucial in defining prevention strategies and IPC investment.

Purpose and Hypothesis: The feasibility and value of alternate outcome impacts of HAI.

Materials and Methods: Two hospital incidence study with a nested case control and longitudinal follow up at one and three months and qualitative interviews.

Results: HAI quantitative impact was dominated by hospital length of stay, inclusive of post discharge, with only 1% of post discharge costs as result of the impact on primary care services and antibiotic prescribing.

QALY calculations were limited by low recruitment. The utility values and VAS scores were lower at baseline in the HAI group compared to the controls but this was not statistically significantly different. At three month follow up, the utility values and VAS scores increased but again the changes were not statistically significantly different.

Qualitative data illustrated that the majority of patients with HAI faced health complications that impeded their day-to-day functioning to varying degrees. This leads to a hindered attempt at untangling the consequences of HAI from existing issues.

Conclusions: Length of stay (inclusive of readmission) are the best quantitative approach to measuring impact of HAI on health service. Wider data collection on consumables is of questionable merit. Patient reported data collection inclusive of QALYS, is challenged by the patient population in acute care with HAI. Health technology assessments traditionally require QALY measures to be created, it may be time to consider alternative options and not let perfection be the enemy of the good.

36: Prevalence of extended spectrum beta- lactamase and metallo- beta- lactamase genes in imipenem resistance pseudomonads isolated from hospital admitted patients

Rubaiya Binte Kabir[1]

[1]Dhaka Medical College, Dhaka, Bangladesh, Dhaka, Bangladesh

Purpose:

Researchers are substantially concerned about pseudomonads and its multidrug resistance patterns which are due to multiple mutations and acquirement of resistance genes. Presence of metallo-β-lactamase (MBL) is one of the pivotal reasons in treatment failure in carbapenem therapy. Production of β-lactamase (class A and D) in these isolates makes the treatment more challenging. Due to importance of the carbapenems in resistant infections management, finding the true frequency of such enzymes is imperative.

Materials and methods:

This cross- sectional study was conducted on 233 clinical isolates of pseudomonads from infected burn, surgical wounds and ETA samples of patients attending Dhaka Medical College Hospital, Dhaka, Bangladesh in the period from July 2017 to December 2018. Isolation and identification were done by culture, biochemical tests and PCR. Isolates were tested for antimicrobial susceptibility using disc diffusion method and MIC. ESBL and MBL producing pseudomonads were identified phenotypically (double disc synergy and disc diffusion test respectively) as well as by conventional PCR.

Results:

Pseudomonads showed high prevalence of resistance against 3rd generation cephalosporin, while most of the isolates (93.1%) were sensitive to colistin and tigecycline. Among the 44 phenotypically detected ESBL producing Pseudomonads 65.91% were ESBL producers by PCR. Among the 72 phenotypically detected imipenem resistant strains, 79.17% were positive for ESBL (blaPER-1, blaSHV, blaTEM, and blaOXA-10) and 50% were positive for MBL encoding genes (blaNDM-1, blaVIM).

Conclusion:

Alternative antibiotics (colistin, tigecycline) or antibiotic combination are preferable for ESBL and MBL producing imipenem resistant pseudomonads for a better management of multidrug resistant strains.

37: Analysis of retrospective malaria blood film and rapid diagnostic test data in Sheffield

Mr. Ian Wei Lim[1], Dr. Ruth Payne[2], Mr. Chris Robson[3]

[1]University Of Sheffield Medical School, Sheffield, United Kingdom, [2]Department of Infection, Immunity and Cardiovascular Disease, University of Sheffield Medical School, Sheffield, United Kingdom, [3]Department of Haematology, Royal Hallamshire Hospital, Sheffield, United Kingdom

UK laboratory guidelines suggest that where there is a strong clinical suspicion of malaria despite a negative initial film, further thick blood films should be obtained 12-24 hours after the first, and again after another 24 hours. However, in addition to serial testing, many clinical laboratories are now routinely using rapid diagnostic tests (RDTs) for the diagnosis/exclusion of malaria.

This study aimed to evaluate the benefits of serial testing in the context of routine RDT use, and to assess the proportion of negative tests for which serial testing was performed in Sheffield, United Kingdom.

A retrospective review of malaria diagnostic tests conducted in Sheffield Teaching Hospitals Haematology laboratories over a five-year period was conducted with data extracted from the laboratory reporting system (Apex). The analysis included 1429 patient records, each reviewed for the number of follow up tests and whether diagnosis was made on the initial or follow up tests.

36.6% of the sample population had 3 or more blood films examined following initial negative results with 45.1% and 18.3% having one and two consecutive blood films examined respectively. 101 patients had a positive RDT and/or blood film result. 3 were false positives (no Plasmodium DNA detected by PCR at the reference laboratory). All true positives (n=99) except one were diagnosed on the first test with a combination of blood film and RDT.

Our data suggest that in this setting, malaria can be accurately diagnosed following a single blood film examination in conjunction with a sensitive-RDT.

39: Pelvic Osteomyelitis Complicating Pressure Sores. Retrospective Prevalence and Management evaluation study in a district general hospital in Surrey

Dr Abhishek Thanuja Jayadhar[1], Nicki Lewis[1], Dr Timnit Tekie[1], Dr Roshan Chirakkal[1], Dr Derren Thambipillai[1], Dr Sumera Rahim[1], Dr Dheeraj Panchaksharam[1], Mr Ashwin Unnithan[1]
[1]*Ashford And St. Peter's Hospital NHS Trust, Chertsey, United Kingdom*

Introduction:

Pelvic osteomyelitis is one of the worse but preventable complication of stage IV pressure sores. Most seen in bed bound patients affected by CNS injuries

Aims and objectives:

The aim of the study is to understand the local prevalence of pelvic osteomyelitis complicating pressure sore and to develop a treatment algorithm.

Materials and methods

A retrospective study was conducted among the patients who have been diagnosed with pelvic osteomyelitis due pressure sore during April 2018 to June 2021 in Ashford and St. Peter's hospital NHS trust. Different variables like comorbidities, duration, treatment given, and relapses were reviewed using the electronic case records manually.

Results:

22 patients were diagnosed with pelvic osteomyelitis out of that 16 (72.7%) were due to pressure sores. Increased prevalence is seen during the COVID time due to immobility. All the patients were treated with antibiotics but only 6 (37.5%) of them were given combined surgical and medical management. 5 readmissions noted during the study period. Significantly none of the patients who got surgical treatment got readmitted.

Conclusion:

To conclude, prevention is always better than cure. Patients coming to the hospital must be risk accessed and care must be given to prevent pressure sores. Early changes must be noted, and proper care must be given in the initial stages itself. Management of pelvic osteomyelitis requires a team of doctors. From the literatures its evident that recurrences, reinfections, and readmissions are low in those who have been treated with combined medical and surgical management.

40: Early switch to oral antibiotics in brain abscesses

Dr Alexander Richards[1], Dr Monica Ivan[1], Laura MacLachlan[1]
[1]*Hull University Teaching Hospitals NHS Trust*

Introduction:

Improved insights into the favourable pharmacokinetic properties and bioavailability of some oral antibiotics suggest that early IV to oral transition could change the management of deep-seated brain infections. Linezolid has an excellent bioavailability and safety in treating CNS infections. A large, randomised control trial is ongoing and will hopefully provide definitive answers.

Methods:

We retrospectively included 12 patients diagnosed with deep-seated CNS infections, treated with less than 7 days of intravenous treatment. Following aspiration and drainage, stable patients with gram-positive organisms in tissue samples were offered early switch to oral linezolid. Informed consent was obtained in all cases. Clinical outcomes and recovery were compared against the Glasgow Outcome Scores for brain injury.

Results:

In our cohort, 8 patients were diagnosed with brain abscess, 2 subdural empyema, 1 cerebritis, and 1 ventriculitis. For post-operative infections, the interval between surgery and infection varied between 2 weeks and 4 years. Patients were transitioned to linezolid after an average of 4.3 days of intravenous treatment. 8 patients achieved full recovery, 3 had moderate disability and 1 died from a pre-existing cancer diagnosis. Linezolid associated side-effects were reported in 4 patients (1 thrombocytopenia, 1 visual dots, 2 gastrointestinal), 1 patient required further change in antibiotic.

Discussion:

In our experience, early oral treatment in deep-seated CNS infections has showed acceptable clinical outcomes and recovery. This represents a very attractive option for managing patients outside the hospital, having significant impact on length of hospital stay and, most importantly, on patients' mental wellbeing.

41: Performance of SARS-CoV-2 diagnostic assays in the 'Molecular detection of SARS-CoV-2' EQA

Dr Marit Orav[1], Dr Katie Minns[1], Mr Habib Seyedzadeh[1], Ms Shabana Bi[1], Ms Vuyelwa Nkomo[1], Ms Rhiannon Weale[1], Mr Mohammed Islam[1], Ms Heather Crowton[1], Dr Sanjiv Rughooputh[1]
[1]UK NEQAS for Microbiology, London, UK

UK NEQAS for Microbiology launched the 'Molecular detection of SARS'CoV-2' EQA in August 2020, preceded by two pilot study distributions. The EQA scheme is distributed monthly with two EQA samples dispatched in each distribution. This presentation reviews the performance of SARS-CoV-2 diagnostic assays as reported by participants over 12 distributions and 24 (18 positive and 6 negative) distributed EQA samples.

92 participants (including 50 UK participants) reported results from 27 different SARS-CoV-2 detection assays for the first distribution. By the 12th distribution 333 participants (including 129 UK participants) were reporting results from 82 different SARS-CoV-2 detection assays. Overall performance was excellent, with the average rate of reporting an incorrect result across all specimens being 1.57% for all participants and 0.92% for UK participants. The average rate of reporting an incorrect result for a negative sample was 2.04% for all participants and 1.58% for UK participants. The average rate of reporting an incorrect results for a positive sample was lower – 1.41% for all participants and 0.69% for UK participants. The highest rate of reporting an incorrect result for a specimen was 4.32% for all participants and 3.61% for UK participants.

We conclude that overall the performance of SARS-CoV-2 assays used by UK NEQAS participants is excellent. The monthly distributions allow for prompt monitoring of the assays and identification of assays performing poorly.

43: PCT levels within 48 hours in COVID-19 are associated with shorter antibiotic durations in ICU

Dr Philip Moseley[1], Dr Niall Jackson[1], Dr Amr Omar[1], Dr Mohammed Eldoadoa[1], Dr Christos Samaras[1], Dr Rukinder Birk[1], Dr Farhan Ahmed[1], Dr Prithwiraj Chakrabarti[1]
[1]*Milton Keynes University Hospital, Milton Keynes, UK*

Antibiotics are widely used in the coronavirus disease 2019 (COVID-19) pandemic despite a low incidence of bacterial co-infection. We evaluated the role of Procalcitonin (PCT) guided antibiotic therapy on a cohort of COVID-19 patients admitted to ICU. The primary study outcome measures were antibiotic duration by day 7 of ICU admission and total duration of antibiotic therapy during inpatient stay. Antibiotic duration was shorter (1.5 days in the first 7 ICU days, p=0.019 and 3.5 days during in-patient stay, p=0.012) for COVID-19 patients who had a PCT measurement within 7 days of admission compared to patients who did not have. PCT was found most effective when it was done within the first 48-hour period with a reduction in antibiotic days at 7 days (5 days vs 7 days, p=0.049) of admission and total antibiotic days during in-patient stay (9.5 days vs 13.5 days, p = 0.025).

44: An evaluation of the EUCAST rapid antimicrobial susceptibility test (R-AST) for blood cultures.

Miss Jennifer Welsh[1], Professor John Perry[2], Dr Manjusha Narayanan[2]

[1]Newcastle University, Newcastle Upon Tyne, United Kingdom, [2]Newcastle Upon Tyne Hospitals NHS Foundation Trust, Newcastle Upon Tyne, United Kingdom

We aimed to evaluate the effectiveness and the accuracy of the R-AST method compared to the standard antibiotic susceptibility testing methodology used in current lab practice. 87 blood cultures of 75 different strains (consisting of 24 clinical strains and 51 control strains) were processed in line with both methods, using the current method as control. In line with the EUCAST guidelines for performing R-AST, readings were taken at 4 and 6 hours respectively, and checked for concordance with the results obtained using the standard method. Major errors (false indication of resistance) and very major errors (false indication of susceptibility) were also to be identified. The interpretability of the results at 4 and 6 hours was recorded, with implications as to the practical applicability of the method. Results were interpretable for the majority of strains after 4 hours, ranging from 64% of strains for piperacillin-tazobactam to 98% of strains for gentamicin. After 6 hours this improved, ranging from 85% for piperacillin- tazobactam to 98% for gentamicin, ceftazadime and trimethoprim-sulfamethoxazole. No major errors or very major errors were seen for any strain against any antibiotic using R-AST, and the minor error rate was less than 5% for all antibiotics. Sufficient numbers of enterobacteriales were tested to conclude that the R-AST method is effective for routine testing. Where a result is interpretable at 4 hours, results are highly reliable. For other species, only preliminary conclusions could be drawn.

46: The Gut Microbiome in Cirrhosis:A novel potential drug target.

Dr Dominic Worku[1]

[1]*Morrison Hospital, Swansea , Wales*

The gut microbiome is a versatile organ which has been implicated in multiple conditions. Cirrhotic patients are well known to exhibit gastrointestinal dysfunction (e.g. Small intestinal bacterial overgrowth, delayed gut transit and enhanced intestinal barrier permeability as a result of gut inflammation, portal hypertension and enterohepatic circulation alteration). This culminates in altered nutrient processing, endotoxemia and transformed mucosal immunology leading to dysbiosis. Recent work has highlighted how the Cirrhosis Dysbiosis Ratio (CDR) can correlate with model of end stage liver disease (MELD) score. Key bacterial populations implicated as part of this include both 'good' and 'bad' bacteria including Lachnospiraceae, Ruminococcaceae, Veillonellaceae, Clostridiales, Enterobacteriaceae and Bacteroidaceae.

While knowledge of the microbiome has improved in recent years, the analysis of the gut microbiome remains technologically challenging with a plethora of confounders present that effect the interpretation of results. Moreover, it has not be conclusively proven that microbiome changes precede the development of disease however new data does show progressive metagenomics changes between cirrhotic patients with compensated and decompensated disease. As a result the microbiome appears to be a good target for pharmaceuticals to possibly reduce progression of disease in a novel manner. Here we discuss recent advances in the knowledge of the microbiome in Cirrhosis and identify areas of further research.

48: Experience in CLABSI prevention measures in a medical ICU in a tertiary care hospital in a developing country

Dr Mahendran A J[1], Dr Rajni Gaind[1]
[1]*Vardhaman Mahavir Medical College, New Delhi, India*

Introduction- Central line associated blood stream infection (CLABSI) is one of the leading Hospital acquired infections, causing significant of morbidity and mortality.

Aim: To study the change in CLABSI rate after implementation of intensive educational interventions for healthcare workers pertaining to bundles of infection prevention.

Materials and methods: In 6 months observation period, 61 ICU cases with central line were followed for development of CLABSI. In the post intervention (9 months) phase, 103 cases of central line were followed in the same ICU.

Results- There was an ill-sustained fall (25.3 Vs 8.1) in CLABSI rate soon after educational program conducted. There was significant improvement to compliance with practices of infection prevention especially hand hygiene ($p<0.05$). But, the population in pre and post intervention phase was heterogeneous with increase in median APACHE score and number of ARDS cases. This caused increase in device utilization. There was no overall improvement in CLABSI rate after the intervention part. However, there was 15.5% reduction in CLABSI when the ARDS predominant months in pre and post intervention phases were considered.

Conclusion: Intensive and continuous teaching programmes alone can cause significant compliance to hygiene practices and possibly for reduction in CLABSI in resource limited settings.

49: Evidence of the reduction of acute circulating communicable viruses during the SARS-CoV-2 pandemic in London

Dr Alexandra Bramley[1], Dr Tim Crocker-Buque[1], Professor Judith Breuer[2], Dr Tabitha W Mahungu[1], Timothy Best[3]

[1]Department of Virology, Royal Free London NHS Foundation Trust, London, United Kingdom, [2]Division of Infection, Immunity and Inflammation, Great Ormond Street Institute of Child Health, University College London, London, United Kingdom, [3]Department of Microbiology, Great Ormond Street Hospital for Children NHS Foundation Trust, London, United Kingdom

Aim: There is well documented evidence of the significant reduction of seasonal respiratory and gastrointestinal viral infections during the SARS-CoV-2 pandemic. There are fewer reports of the effect the pandemic has had on varicella infections across all age groups. This paper evaluates the impact of the SARS CoV-2 pandemic on the number of respiratory, gastrointestinal and varicella zoster virus infections at two institutions by reviewing laboratory results. Methods: We used a retrospective observational design and included all 'first positive' reverse transcriptase polymerase chain reaction (RT-PCR) test results between April 2019 and March 2021 for respiratory and gastrointestinal viruses at two London hospitals and varicella zoster virus results from one institution. Results: Comparing pre-pandemic (April 2019-March 2020) with pandemic periods (April 2020-March 2021) there was an 87.5% reduction in positive tests for gastrointestinal viruses (585 vs. 73), a 62.2% reduction in paediatric respiratory viruses (2381 vs. 899) and 53.8% reduction in varicella (65 vs. 30) Conclusion: The evidence we present here demonstrates that there has been a significant reduction in varicella infections in addition to, gastrointestinal and respiratory viruses in the population covered by two large hospitals in London during the SARS CoV-2 pandemic.

50: Disseminated Bacillus Calmette-Guérin (BCG) infection following intravesical treatment for recurrent bladder cancer – a rare clinical case successfully treated with antimycobacterial therapy and subsequently confirmed with histology and positive blood cultures

Dr Alp Aslan Notghi[1], Dr Faroakh Hosseini[1], Dr Nickolaos Tsogas[1]
[1]*Gloucester Royal Hospital, Gloucester, UK*

Intravesical BCG is a highly effective treatment for bladder cancer and remains the mainstay for localised non-muscle-invasive types. Disseminated BCG infection in immunocompetent patients undergoing this treatment has been described although rare. A 71-year-old man presented with several months of night sweats, myalgia, malaise, weight loss, dry cough and worsening dyspnoea. Blood biochemistry revealed raised inflammatory markers and alkaline phosphatase. Computerised tomography of the thorax, abdomen and pelvis along with a chest X-ray, urine culture, blood cultures, COVID-19 testing, echocardiography and extended serological testing revealed neither a clear infective nor malignant cause. One year prior to admission he had intravesical BCG treatment for non-muscle-invasive bladder cancer and the onset of his systemic symptoms correlated with the second four-monthly cycle of maintenance therapy. T-SPOT assay was negative, as expected. Given this context treatment was started for presumed disseminated BCG infection with ethambutol, isoniazid and rifampicin after which fevers subsided. Liver biopsy histology subsequently revealed granulomatous inflammation consistent with this diagnosis. New oxygen requirement and worsening dyspnoea prompted a repeated CT of the chest showing evidence of a diffuse proliferative bronchiolitis which responded to corticosteroids. Following a cessation of his fevers and constitutional symptoms, gain in weight and weaning off oxygen he was discharged with a reducing course of steroids. Mycobacterial blood cultures grew M. bovis. At two months follow up his symptoms had significantly improved. He continues with maintenance antimycobacterial therapy for seven months. This case highlights the importance of early treatment on clinical grounds before key results are available.

52: A rapid evaluation of a novel automated hand hygiene monitoring system in response to COVID-19

Ms Katie-Rose Cawthorne[1], Dr Richard Cooke[3], Darren Powell[2]
[1]*Department of Innovation, Alder Hey Children's NHS Foundation Trust, Liverpool, United Kingdom,*
[2]*Directorate of Pathology, Alder Hey Children's NHS Foundation Trust, Liverpool, United Kingdom,*
[3]*Department of Medical Microbiology, Alder Hey Children's NHS Foundation Trust, Liverpool, United Kingdom*

Background: Direct observation (DO) of hand hygiene (HH) behaviour remains the gold standard tool for measuring staff compliance during the COVID-19 pandemic. However, gathering HH data in the current environment may be challenging due to staff resources being diverted to COVID-19 containment measures.

Methods: A validation study was undertaken to demonstrate the accuracy of a new and novel automated hand hygiene monitoring system (AHHMS), Hy-genie, created by a NHS Trust. A low risk clinical environment was selected, involving a Pathology Directorate, to facilitate the study and minimise risk of COVID-19 cross-infection. Though Hy-genie is designed to provide personalized staff feedback on HH performance, the preliminary impact of such an AHHMS was assessed by providing staff with group feedback via email against an improvement goal of 20% set above baseline HH activity. The study involved two periods of data collection: 6 weeks baseline and then 6 weeks of weekly staff feedback.

Results: 102 Pathology staff participated. 19 HH dispensers (11 soap, 8 gel) were linked to Hy-genie sensors. Against DO, the AHHMS had a sensitivity and positive predictive value of 99%. A total of approximately 20,000 HH events were captured with an increase of HH staff activity of 14.6% during feedback. The ratio of soap to gel usage remained unaltered during the study.

Conclusions: The high accuracy of Hy-genie, combined with an improvement in staff HH performance, suggests that further investigation of this type of AHHMS in a high-risk clinical environment is warranted.

53: Bugs on the Brain: A case of polymicrobial brain abscess

Dr Ashleigh Mcmaster[1], Dr Aidan Hanrath[1], Dr Manjusha Narayanan[2]
[1]Department of Infection and Tropical Medicine, Newcastle upon Tyne Hospitals, Newcastle upon Tyne, United Kingdom, [2]Department of Microbiology, Newcastle upon Tyne Hospitals, Newcastle upon Tyne, United Kingdom

A 43-year old gentleman was admitted with progressive right-sided headache, increasing difficulty typing with his left hand and an unsteady gait. He was systemically well with no fevers, night-sweats or weight loss. He had no past medical history, no regular medications, and was previously fit and well. MRI head with contrast revealed an irregularly enhancing mass in the right thalamus with surrounding vasogenic oedema with mass effect. A subsequent CT of the chest, abdomen and pelvis showed no evidence of other masses or collections, and transthoracic echocardiogram did not show evidence of vegetation. Blood-borne virus screen, including HIV, was negative.

He underwent a burr-hole evacuation of pus, with culture identifying polymicrobial infection. Aggregatibacter aphrophilus and Gemella morbillorum were isolated on culture whilst Aggregatibacter aprophilus and Parvimonas micra were identified on 16S RNA PCR testing. Given the organisms identified, a dental source of infection was suspected. The patient commenced treatment with meropenem 3g BD for 46 days, before being stepped down to oral co-trimoxazole and metronidazole for a further 21 days.

Serial MRI images demonstrated progressive improvement in intracranial appearances with no suggestion of abscess recurrence, and the patient made a complete neurological recovery.

54: Prior COVID-19 infection is associated with increased adverse events after the first, but not the second, dose of the BNT162b2/Pfizer vaccine.

Dr Rachael Raw[1], Dr Jon Rees[2], Dr Clive Kelly[3], Prof Caroline Wroe[3], Dr David Chadwick[3]
[1]School of Medicine and Health, Newcastle University, Newcastle, United Kingdom, [2]School of Psychology, University of Sunderland, Sunderland, United Kingdom, [3]James Cook University Hospital, Middlesbrough, United Kingdom

The BNT162b2/Pfizer SARS-CoV-2 vaccine has been widely used in the UK, particularly amongst healthcare workers (HCWs). To establish whether previous COVID-19 influenced vaccine-associated Adverse Events (AEs), we conducted a survey-based study of HCW in Northeast England. Out of 1238 HCW, 32% self-reported prior positive PCR and/or antibody test for SARS-CoV-2. Post-dose AEs were worse in those with prior COVID-19 after the first, but not the second dose of vaccine. Second dose AEs were greater in frequency and severity, regardless of COVID-19 history, and they were more systemic in nature. Women and younger HCW were more likely to report AEs after both doses, while dosing interval had no effect on AEs. Long-COVID was associated with greater frequency and severity of AEs after dose 2, but not dose one. These findings have implications for vaccine hesitancy and informing guidelines for recommended dosing protocols.

55: UK consensus definitions for Necrotising Otitis Externa in adults

Dr Susanne Hodgson[1], Miss Maha Khan[2], Dr Maia Patrick-Smith[1], Mr Pablo Martinez-Devesa[1], Miss Emma Stapleton[2], Dr Martin Williams[3], Dr Pieter Pretorius[1], Mr Martin McNally[1], Dr Monique Andersson[1]

[1]Oxford University Hospitals NHS Foundation Trust, Oxford, UK, [2]Manchester University Hospitals NHS Foundation Trust, Manchester, UK, [3]University Hospitals Bristol and Weston NHS Foundation Trust, Bristol, UK

Background: Necrotising otitis externa (NOE) is an under-recognised, poorly understood, severe infection of the external ear canal and lateral skull base. No established national or international guidelines exist for NOE and the optimal strategy for diagnosis and management remains uncertain. There is no widely accepted case definition for NOE and none have been developed via consensus of multidisciplinary experts. We aimed to established consensus definitions for NOE to facilitate the diagnosis and exclusion of NOE in clinical practice and expedite future high-quality study of the condition.

Methods: The work comprised of a systematic review of the literature, five iterative rounds of consultation via a Delphi process and open discussion within the collaborative. An expert panel assessed the results to produce the final outputs.

Results: Eighty UK clinicians specialising in ENT, Infection and Radiology with a special interest in NOE took part in the work which was undertaken between 2019 and 2021. The minimum response rate for a Round was 76%. Consensus criteria for all proposed case definitions, outcome definitions and consensus statements were met in the fifth round and shared with leading UK specialist bodies for review.

Conclusions: This work distils the clinical opinion of a large group of multidisciplinary specialists from across the UK to create practical definitions and statements to support clinical practice and research for NOE. This is the first step in an iterative process. Further work will seek to validate and test these definitions and inform their evolution.

56: Aflatoxin and microbial load in locally formulated herbs and guts of albino rats fed on them

Dr Eniola Oni, Miss Mariam Olatubosun
[1]*Fedral University of Agriculture , Abeokuta, Nigeria*

Contamination of locally formulated herbs with aflatoxins and pathogenic organisms posses major health concern to humans and also animals hence making it imperative to determine the level of aflatoxin contamination and microbial load in the locally formulated herbs and predominant organisms in the guts of albino rats. Eighty four neonatal rats (mean weight 11.23±0.41g) divided into 4 groups of 21 rats each was used. Group 1 rats were fed with only feed and distilled water (control group), groups 2, 3, 4 had (0.5, 1.0 and 1.5 % of the herb and distilled water) for 8 weeks respectively. Ceacal, colon and jejunal samples of the intestine were collected for microbial analysis, blood samples for haematology, and DNA analysis were done respectively. Data collected were analysed using ANOVA, Student-Newman-Keuls test was used to separate the means. Microorganisms isolated include: Staphylococcus sp., Clostridium perfringes, Lactobacillus sp., Bacteroides fragilis, Streptococcus spp., Proteus sp. and Escherichia coli. Drastic reduction ($p<0.05$) in weight from 49.98 g to 10.3 g was observed at 8weeks in the herb treated-rats. Significant ($p<0.05$) decrease in White Blood Cell count (WBC) from 8450.0±320.6 to 3616.7±325.1 mm3was observed in the treated rats. A significant reduction ($p< 0.05$) in the Packed Cell Volume (PCV) was observed from 38.33 ± 3.22 to 19.09±1.67 %. Rigorous activities were noticed in alchoholic herb treated rats. DNA fragmentation was observed in the treated rats, while no DNA fragmentation was observed in the non treated rats. This study showed that aflatoxin and herbs was toxic to neonatal rat.

57: Case of delayed descending necrotising mediastinitis in an immunocompetent patient.

Doctor Senan Al-biatty[1], Doctor Sulman Hasnie[1], Doctor Harry Bardgett[1], Doctor Alina Negut[1]
[1]*Bradford Teaching Hospitals NHS trust, ,*

Background: Streptococcus constellatus is an organism that is part of the Streptococcus anginosus group. Its distinguishing feature is its tendency to form abscesses and severe systemic polymicrobial infection.

Case Summary: We present the case of a 33-year-old man with toothache and prominent left-sided submandibular swelling within a 48-hour period. He had poor dentition and apyrexial with a normal white cell count but CRP of 332. Subsequent X-ray Orthopantogram had shown a large area of lucency in keeping with a dental abscess. A further CT neck and thorax demonstrated multiple gas collections tracking down with extension to the anterior mediastinum, implying an odontogenic focus at its source. Multiple percutaneous drains were placed and IV antibiotics were given with microbiology samples pointing to Streptococcus constellatus. However, our patient went on to self-discharge with oral Co-amoxiclav (but topped up with oral Amoxicillin 500mg TDS) and Metronidazole TDS.

He was readmitted to the Acute Medical Unit complaining of right-sided chest pain and breathlessness with tenderness in the anterior 4-6th ribs. Whilst the CT thorax was negative for pulmonary embolism, worsening inflammatory soft tissue thickening behind the sternum was noted. Our patient seemed to improve clinically and biochemically on IV Piperacillin-tazobactam but a repeat CT revealed a mediastinal collection. After ultrasound drainage and IV antibiotics on OPAT, our patient made a full recovery.

Conclusion: We highlight an example of descending necrotising mediastinitis caused by Streptococcus constellatus. We emphasise the crucial importance of source control in obtaining a cure in a rapidly progressive infection.

58: Development of sequencing independent approach for Pseudomonas aeruginosa typing

Miss Kristýna Dufková[1,2], Matěj Bezdíček[1,2], Iva Kocmanová[3], Martina Strnadová[1], Ivana Vítková[3], Martina Lengerová[1,2]

[1]Department of Internal Medicine, Hematology and Oncology, University Hospital Brno, Brno, [2]Department of Internal Medicine, Hematology and Oncology, Faculty of Medicine, Masaryk University, Brno, [3]Department of Clinical Microbiology and Immunology, University Hospital Brno, Brno

Multilocus sequence typing (MLST) is considered a gold standard in bacterial typing, despite limited by cost, staff and time demands. Methods based on high resolution melting (HRM) analysis are effective alternative to those based on sequencing due to good reproducibility and easy performance while reaching great discriminatory power. In mini-MLST, sequencing of MLST genes is replaced by HRM. Mini-MLST has been successfully used for certain hospital associated pathogens. Here, we report novel mini-MLST scheme for Pseudomonas aeruginosa typing. The primers for mini-MLST were designed to flank the informative regions of MLST genes. In total, 50 predesigned loci were examined in silico with respect to G+C content and the number of melting alleles within each locus was predicted. The 20 candidates displaying the highest discriminatory ability were subsequently subjected to laboratory experiments. Among these, 6 loci generated representative melting curves and were included to mini-MLST scheme. The final melting type (MelT) was established by allele´s number combination. The MelT key enabling the translation between MLST STs and MelTs was generated.The developed 6 loci scheme enables to distinguish among 731 MelTs within the MLST database. The discriminatory power with respect to MLST reached 0.994. To validate the method, we used 100 P. aeruginosa isolates obtained at the University Hospital Brno. The isolates were divided into 53 MelTs indicating panmictic structure. The newly developed scheme will be further validated on larger set of isolates, thus already presenting appropriate tool for Pseudomonas aeruginosa hospital screening, especially cystic fibrosis isolates known for clonal population structure.

59: Prescribing in a pandemic: Electronic prescribing aids to improve non-specialist adherence to COVID-19 guidelines

Dr Jo Salkeld[1], Dr Marc Woodman[1], Dr Hanna Nguyen[1], Dr Alka Sobti[1], Dr Anna Goodman[1]
[1]*Guy's And St Thomas' Nhs Foundation Trust, London, UK*

Introduction

The landscape of COVID-19 management is continuously evolving and so ensuring awareness of, and adherence to, the current guidance is challenging. As the second wave of COVID-19 emerged, we recognised the urgent need for better standardisation of patient care in the context of increasing patient load and acuity and the resulting redeployment of staff.

Methods

COVID-19 patients admitted to adult medical wards were identified via their positive PCR results. An e-precribing protocol was introduced and adherence to prescribing guidelines was assessed via the electronic noting and prescribing systems. A survey regarding doctors' views on the prescribing protocol was also undertaken.

Results

Following introduction of the protocol, adherence to the guidelines improved. The proportion of patients who were either prescribed dexamethasone or had a valid contraindication documented increased from 85% to 97% and for remdesivir this increased from 60% to 79%. There was also significant improvement in the prescription of PRN insulin for patients on steroids (26% to 48%) and oxygen (43% to 79%).

93% of doctors surveyed were aware of the protocol and 81% had used it. Confidence in adhering to the protocols increased from an average of 3.3 to 4.5 out of 5 and 93% of respondents agreed that the protocol was easy to use.

Discussion

Overall this demonstrates that electronic prescribing protocols can be effective in increasing adherence to guidelines and doctors felt this was a useful tool. This is especially important in a pandemic situation in which many doctors are redeployed outside of their usual specialties.

61: The first reported cases of cat-transmitted sporotrichosis in the United Kingdom

Dr James Barnacle[1], Dr Ashley Whittington[1]

[1]*Department of Infectious Diseases, Northwick Park Hospital, London North West Healthcare NHS Trust, London, United Kingdom*

Sporotrichosis, or Rose Gardener's disease, has a worldwide distribution and is caused by the dimorphic fungus Sporothrix schenkii. It classically presents as an ascending nodular lymphadenitis tracking from a non-healing ulcer, following contact with contaminated plant matter. Since the late 1990s, an epidemic of cat-transmitted sporotrichosis caused by S. brasiliensis has been reported in South-Eastern Brazil, with its epicentre in Rio de Janeiro, where two-thirds of over 4,000 sporotrichosis cases reported trauma with a cat as the source of infection. Here we report two cases of cat-transmitted sporotrichosis in a mother and daughter from Rio de Janeiro, who had lived in the UK for the last three years. They both developed non-healing ulcerating lesions on their upper limbs at the site of scratches from their domesticated cat that was undergoing treatment for sporotrichosis, with a diagnosis based on clinical features and 3-4µm ovoid yeast cells seen on stained skin smears. The cat was from Brazil, but had also moved to the UK three years ago, and had developed the scalp and paw lesions four months prior. Of note, three of the roses in their garden had been brought from Brazil. Mother and daughter were started on itraconazole with resolution of the lesions over the following weeks. These are the first UK reported cases of cat-transmitted sporotrichosis; the first case report of sporotrichosis in a cat was published just last year. We highlight sporotrichosis as a differential in non-healing ulcers, and the importance of a thorough animal contact history.

63: Ceftazidime/avibactam and aztreonam synergy testing: development of a practical laboratory approach using an E-test/disc method

Dr Timothy Rawson[1,2], Ilona Brzeska-Trafny[3], Rosemary Maxfield[3], Manfred Almeida[3], Mr Mark Gilchrist[1,2], Dr Ximena Gonzalo[1], Dr Luke Moore[3,4], Dr Hugo Donaldson[3,4], **Dr Frances Davies[1,3]**

[1]Imperial College Healthcare NHS Trust, London, [2]Centre for Antimicrobial Optimisation, London, [3]North West London Pathology Laboratory, London, [4]Chelsea and Westminster NHS Foundation Trust, London

Background:

In response to New Dehli Metallo-beta-lactamase (NDM) infection, combination antimicrobial therapy with ceftazidime/avibactam (CAZ/AVI) plus aztreonam (ATM) has been explored. This study evaluated a practical laboratory method of testing for clinically significant synergy between CAZ/AVI+ATM in NDM Enterobacterales.

Methods:

Minimum inhibitory concentration (MIC) of clinical NDM isolates were determined for ATM alone and CAZ/AVI+ATM using broth dilution. Restoration of ATM breakpoint following the addition of CAZ/AVI was explored. A CAZ/AVI E-test/ATM disc method was developed and subsequently compared to broth dilution.

Results:

Of 43 NDM isolates, 33/43 (77%) were ATM resistant (median [range] MIC=56 [16 – 512] mg/L) using the broth dilution method. Addition of CAZ/AVI restored the ATM breakpoint (MIC <4mg/L) in 29/33 (89%) of resistant isolates.

The E-test/disc method correlated with findings from broth dilution in 35/43 (81%) of cases. E-test/disc sensitivity was 77% and specificity 85%. Positive predictive value was 92% and negative predictive value 61%.

Conclusion:

CAZ/AVI+ATM demonstrated clinically significant synergy in most ATM resistant NDM Enterobacterales. The E-test/disc method is a quick, reproducible, and reliable method of testing for clinically relevant synergy in the microbiology laboratory.

65: Systematic Review of the Diagnosis and Management of Necrotising Otitis Externa: Need for High-Quality Research

Dr Junko Takata[1,2], Mr Michael Hopkins[3], Miss Victoria Alexander[4], Dr Oliver Bannister[5,6], Miss Lucy Dalton[7], Miss Laura Harrison[8], Dr Emily Groves[9,10], Miss Hala Kanona[11], Dr Gwennan Llwyd Jones[12], Mr Hassan Mohammed[13], Dr Monique Andersson[5,14], Dr Susanne Hodgson[5,15,16]

[1]Department of Infectious Diseases, Northwick Park Hospital, London North West University Healthcare NHS Trust, London, UK, [2]Infectious Diseases Data Observatory, Centre for Tropical Medicine and Global Health, University of Oxford, Oxford, UK, [3]Department of Ear, Nose and Throat Surgery, NHS Lothian, Royal Infirmary of Edinburgh, Edinburgh, UK, [4]Department of Ear, Nose and Throat Surgery, St George's University Hospital NHS Trust, London, UK, [5]Department of Infection, Oxford University Hospitals NHS Foundation Trust, Oxford, UK, [6]Modernising Medical Microbiology, Nuffield Department of Medicine, University of Oxford, Oxford, UK, [7]Department of Ear, Nose and Throat Surgery, Queen Elizabeth Hospital, University Hospitals Birmingham NHS Foundation Trust, Birmingham, UK, [8]Department of Ear, Nose and Throat Surgery, Royal Berkshire Hospital, Reading, UK, [9]Department of General Medicine, Northwick Park Hospital, London North West University Healthcare NHS Trust, London, UK, [10]Global and Tropical Health Division, Menzies School of Health Research, Charles Darwin University, Darwin, Australia, [11]Department of Ear, Nose and Throat Surgery, The Royal National Ear Nose and Throat and Eastman Dental Hospital, University College London Hospitals NHS Trust, London, UK, [12]Public Health Wales, Microbiology, Cardiff, UK, [13]Department of Ear, Nose and Throat, Newcastle Hospitals NHS Foundation Trust, Newcastle, UK, [14]Nuffield Division of Clinical Laboratory Science, Radcliffe Department of Medicine, University of Oxford, Oxford, UK, [15]Jenner Institute, Nuffield Department of Medicine, University of Oxford, Oxford, UK, [16]Department of Biochemistry, University of Oxford, Oxford, UK

Background: Necrotising otitis externa (NOE) is a rare, aggressive infection with no established diagnostic or treatment guidelines. In this interdisciplinary systematic review, we present a critical analysis of the current evidence base.

Methods: Medline, Embase, Cochrane Library and Web of Science databases were searched. The review was registered on PROSPERO and conducted in accordance with PRISMA.

Results: Of 1,429 identified studies, 70 were included. 73% of studies were evidence level 4, with the remainder at high risk of bias. Case definitions and reported data varied widely, limiting meta-analysis. Median age was 69.2 years and 84% of patients were diabetic; 10% had no immunosuppressive risk factor. Otalgia (96%) was almost universal, with oedema/swelling (76%) and granulation (69%) the commonest signs. Pseudomonas aeruginosa was most commonly isolated (64%) but a wide range of bacterial and fungal pathogens were reported; 13% grew no organisms. Optimal imaging modality for diagnosis and follow-up were unclear. Median duration of antimicrobial therapy was 7.2 weeks (IQR 5.4-9.8 weeks), with no definitive evidence informing optimal choice, duration or route. 21% received surgery, with variability in timing, indication or type.

There was insufficient evidence to support hyperbaric oxygen therapy. 1-year disease-specific mortality was 2.4%; treatment failure and relapse rates were 22% and 7% respectively.

Conclusion: This systematic review is the most comprehensive to date and highlights the lack of robust, high-quality data for this neglected condition. We propose minimal reporting requirements and emphasise that a widely accepted case definition is urgently needed to facilitate high-quality future research.

66: Diagnosing Ventilator Associated Pneumonia in SARs-CoV-2 positive patients

Dr Samuel Hey[1], Dr Farnaz Dave[1], Dr Sarah Lawrence[1], Dr Rosalind Henderson[1], Dr Karen Devine[1]
[1]*North Manchester General Hospital -Manchester University NHS Foundation Trust, Manchester, United Kingdom*

Background

Diagnosing Ventilator Associated Pneumonia (VAP) is challenging due to the lack of universally agreed definition. The significant mortality associated with VAP, and the fact that SARs-CoV-2 positive patients are at considerable risk of developing VAP, makes the appropriate use of diagnostics essential.

Methods

Diagnostic criteria used to support clinical diagnoses of VAP in 27 SARs-CoV-2 positive patients between 15/03/2020 and 29/6/2020 in the North West was reviewed.

The microbiological samples collected included deep respiratory samples and blood cultures.

Results

24/27 (88%) of patients were male with a mean age of 58 (range 35-76). 96% were classed as late onset VAP occurring five or more days following admission.

9/27(33.5%) had blood cultures sent of which 6/9(66%) grew organisms deemed to be relevant to the diagnosis of VAP. Klebsiella Pneumonia 2/6(33%) was the most prevalent isolate associated with VAP..

14/27(51%) had deep respiratory samples sent of which 13/14(92%) were positive. Klebsiella spp were isolated in all deep respiratory samples collected. 16/27(59%) survived the intensive care admission all of whom survived until discharge.

Conclusions

This study demonstrates the majority of VAP diagnosis in SARs-CoV-2 positive patients were made using clinical evidence while only half had relevant samples sent for microbiology. The significant mortality of SARs-CoV-2 positive patients who develop VAP highlights the need for prompt goal directed therapy; this should be guided by appropriate diagnostics including time critical samples for microbiology.

68: 3rd Wave of Covid 19 -are new hospital admitted covid patients vaccinated?

Dr Md Shahriar Kabir[1], Luca Kormos, Rachel Frackelton

[1]*East Lancashire Teaching Hospital, Blackburn, Blackburn*

We are possibly in the 3rd wave of the covid 19 hit in the UK. The North west region especially Blackburn and Darwen area is one of the places where new peak for the 3rd wave was first detected. We have collected data of 123 covid positive patients who needed hospital admission in the month of June and July at Royal Blackburn Hospital.

we looked at their vaccination status. We have found that more than two third of the newly admitted patients did not had any dose of vaccine where as only 16 % had only the first dose. We also looked at ICU admissions of these patients-.we have found those who required ICU only 26 % had both dose vaccine. we have found most common symptom of presentation was shortness of breathe more than 95% and 44 % of the new covid admission was aged less than 50 years old

To summarise, there is significant impact of vaccination in new admission for covid 19 and it is likely going to help us in the battle of covid 19 in the 3rd wave.

69: Cardiothoracic surgery antibiotic prophylaxis

Dr Ashik Babu[1]

[1]Hammersmith Hospital, London, United Kingdom

Introduction: Prophylactic antibiotics administered within an hour of incision can reduced the risk of post operative wound infections. A closed loop audit was performed to assess the antimicrobial stewardship within the cardiothoracic department, of a specialist cardiothoracic center. Local trust guidance suggests administration of cefuroxime and vancomycin post op in cardiac surgery. In thoracic cases, local guidance suggests the use of cefuroxime alone prior to incision with no routine post operative antibiotics.

Aim: To establish adherence to antibiotic prescribing policy for post surgical prophylaxis (cefuroxime and vancomycin). Are antibiotics given an within an hour of knife to skin?

Methods: Data was collected retroscpecitively over a 4 week period (45 cases), to establish prescribing trends accross the junior doctor cohort within the cardiothoracic department. Following the initial audit last year (2020) there has been the introduction of an electronic prescribing template. This audit evaluates the effectiveness of the electronic prescribing template.

Results:

In cardiac surgery, 97% of cases had 24 hours of antibiotics prescribed (3 doses of cef and further dose of vancomycin) compared to 47% previously. In 86% of cases vancomycin is administered within an hour of incision. In 97% of case Cefuroxime was administered within an hour of incision. This in contrast to the previous audit, where in 78% of cases, antibiotics were given in the first hour.

Conclusion:

Post operative antibiotic prescribing in cardio-thoracic surgery cases has markedly improved since the inception of local electronic prescribing antibiotic templates. This reduces human prescribing error rates.

70: Assessing the current role of hospital infection pharmacists in the UK using behavioural science techniques: Insights into further development

Dr Christianne Micallef[1], Dr DA Enoch, Ms Pegah Kamranpour, Mrs Reem Santos, Ms Netta Tyler, Dr Sion Scott

[1]Cambridge University Hospitals NHS Foundation Trust, Cambridge, United Kingdom, [2]Clinical Microbiology and Public Health Laboratory,National Infection Service, Public Health England, Cambridge, United Kingdom, [3]West Hertfordshire NHS Hospitals Trust, Watford, United Kingdom, [4]Cambridge University Hospitals NHS Foundation Trust, Cambridge, United Kingdom, [5]Royal Papworth Hospital NHS Foundation Trust, Cambridge, United Kingdom, [6]University of East Anglia, Norwich, United Kingdom

Introduction:

In the UK, hospital infection pharmacists (HIPs) work alongside colleagues in microbiology and infectious diseases, to deliver antimicrobial stewardship (AMS) initiatives. Previous literature has identified that these roles are varied and include attending ward rounds, responding to clinical queries, conducting audits and quality improvement work.

Aims:

-To assess the current role of UK HIPs in delivering the AMS agenda

-To understand the core challenges of UK HIPs in the delivery of their role

Methodology:

An online questionnaire was developed and mapped to the 14 domains within the Theoretical Domains Framework (TDF). This questionnaire was road-tested and hosted via Microsoft® Forms. All UK pharmacists whose role included "specialist antimicrobial" or "infectious diseases" were eligible. A £50 shopping voucher prize-draw incentive was offered. Ethics committee approval from the Faculty of Medicine and Health Sciences Research Ethics committee at the UEA was obtained. The questionnaire was disseminated to national infection and pharmacy networks via their usual methods of communication and respondents were invited to complete it from 18/02-5/05/21.

Results:

102 HIPs responded. Nearly 90% of respondents were from English hospitals, with 52% from district general hospitals and 29% from teaching hospitals. Over 94% of respondents were at a senior grade and less than 25% stated that they could dedicate >80% of their time to their HIP role.

Main emerging themes include:

• Need for a comprehensive educational programme,

• Research as an integral part of HIP roles with protected/dedicated time to conduct this activity and

• Infection Pharmacists want integration within Microbiology.

72: Bacterial Co-infection and Antibiotic Stewardship in Patients with COVID-19: A Systematic Review and Meta-Analysis

Dr Maria Calderon[1], **Miss Grace Gysin[2]**, Dr Sarah Walpole[3], Dr Felicity Mills[4], Mr Daniel Comandé[5], Dr Ewan Hunter[3]

[1]Universidad Peruana Cayetano Heredia, Lima, Peru, [2]London School Of Hygiene And Tropical Medicine, London, United Kingdom, [3]Department of Infection and Tropical Medicine, Newcastle upon Tyne Hospitals NHS Foundation Trust, Royal Victoria Infirmary, Newcastle, United Kingdom, [4]Greater Glasgow and Clyde NHS Trust, Glasgow, United Kingdom, [5]Institute of Clinical Effectiveness and Health Policy, Buenos Aires, Argentina

Introduction: Understanding the proportion of patients with COVID-19 who have respiratory bacterial co-infections and the responsible pathogens is important to managing COVID-19 effectively while ensuring responsible antibiotic use.

Objective: To estimate the frequency of bacterial co-infection in COVID-19 patients and of antibiotic prescribing and to appraise the use of antibiotic stewardship criteria.

Methods: Systematic review and meta-analysis was performed using major databases up to May 15, 2020. We included studies that reported a) proportion/prevalence of bacterial co-infection in COVID-19 patients and use of antibiotics. Where available, data on duration and type of antibiotics, adverse events, and any information about antibiotic stewardship policies were also collected.

Results: We included 39 studies with a total of 10,815 patients. The overall prevalence of bacterial co-infection was 10.6% (95%CI 6.8%-14.3%). When only confirmed bacterial co-infections were included the prevalence was 4.6 % (95%CI 2.9%-7%). Thirty-five bacterial species were identified, the most frequent being Mycoplasma pneumoniae (n=12[34%]), Pseudomonas aeruginosa (n=4[11.4%]) and Legionella pneumophila (n=2[6%]). The overall antibiotic use was 71.3% (95%CI 63.1%-79.5%). Only one study described criteria for stopping them. All the included studies had a moderate to high risk of bias.

Conclusion: There is currently insufficient evidence to support widespread empirical use of antibiotics in most hospitalised patients with COVID-19, as the overall proportion of bacterial co-infection is low. Furthermore, as the use of antibiotics appears currently to be largely empirical, it is necessary to formulate clinical guidelines to promote and support more targeted administration of antibiotics in patients admitted to hospital with COVID-19.

73: Microbiology surveillance in SARS-CoV-2: supporting antimicrobial stewardship

Dr Farnaz Dave[1], Dr Luisa Corte[1], Dr Ryan George[1], Dr Louise Sweeney[1]
[1]*Manchester Foundation Trust, Manchester, United Kingdom*

Background

Incidence of bacterial co-infection in patients admitted to hospital with SARS-CoV-2 is low. Secondary bacterial infections in those admitted to critical care is higher. Surveillance of microbiology samples in SARS-CoV-2 patients is essential to inform antimicrobial stewardship (AMS) as concerns escalate.

Methods

Retrospective surveillance of blood cultures and respiratory samples from March to October 2020 from SARS-CoV-2 PCR positive inpatients over the age of 18 was undertaken. Samples up to 30 days after diagnosis were included.

Results

2031 patients were SARS-CoV-2 positive. 462 relevant positive microbiology samples were identified from 169 patients. 76%(353) of samples and 54%(91) of patients were from critical care areas.

Of 2008 blood cultures sent 12%(247) were positive. The most commonly isolated organisms were Coagulase-negative staphylococci 41%(101), Enterococcus faecium 13%(32), Klebsiella spp. 9%(22) and Escherichia coli 6%(15). 53%(20/38) of Enterobacterales were AmpC/ESBL producers of which 95%(19) were from critical care.

Only 18% of respiratory samples were culture positive with bacteria of clinical relevance. Klebsiella spp.23%(46) Staphylococcus aureus 15%(31), Pseudomonas aeruginosa 11%(22) and Enterobacter spp.7%(15) were isolated most frequently. 68%(56/82) of Enterobacterales were AmpC/ESBL producers of which 88%(49) were from critical care.

Conclusions

This study demonstrates a low incidence of clinically relevant positive microbiology samples in SARS-CoV-2 positive inpatients outside of critical care.

The majority of positive cultures, of which a significant number were AmpC/ESBL producing Enterobacterales, were from critical care patients many of whom received broad-spectrum antibiotics on admission, highlighting the need for AMS from the start of a patient's journey through to the end.

75: Acute toxoplasmosis in an immunocompromised patient

Dr Ankush Dhariwal[1], Dr Xin Hui Chan[2], Dr Lila Paraskevopoulou[2], Dr Neil Stone[1], Dr Ayala Shirazi[1]
[1]*Department of Infectious Diseases, University College London Hospital, NHS, London, UK,*
[2]*Department of Virology, University College London Hospital, NHS, London, UK*

We describe a case of acute toxoplasmosis in patient with Crohn's disease receiving treatment with adalimumab and azathioprine.

His clinical presentation was non-specific, with an undifferentiated fever, and no focal organ involvement, with the subsequent development of severe neutropenia. The diagnosis was complicated by multiple positive serological tests for viral and bacterial infections, including parvovirus, mycoplasma, CMV, and EBV, although toxoplasmosis was confirmed by positive dye tests.

Despite his persistent fevers and later neutropenia he remained stable allowing for management as an outpatient. He was treated by withholding his immunosuppressants, as well as specific anti-toxoplasmosis therapy, with secondary prophylaxis, to allow his immunosuppressants to be restarted.

This case raises several learning points for clinical practice with regards to the diagnosis and management of toxoplasmosis in the immunocompromised host.

76: Hickam`s dictum: COVID-19 disease and severe vivax malaria co-infection

Dr Wael Goravey[1], Dr Gawahir Ali[1], Dr Hamad Abdel Hadi[1]

[1]Hamad Medical Corporation,1Department of Infectious Diseases, Communicable Diseases Centre, Doha, Qatar

COVID-19 disease and malaria share many clinical features, correct assessment is sometimes difficult particularly if the clinical judgment has been confounded towards the emerging disease(1). To highlight such a dilemma, we report a case of an acute febrile illness which was diagnosed as malaria and COVID-19 co-infection to raise awareness of widening working diagnoses while evaluating febrile illness during the COVID-19 pandemic.

Case Description

A 40-Year-old Asian male presented with a three days history of fever, dry cough, and vomiting. His last travel was three months before his presentation to his country.

Examination showed, pyrexia of 38.80 C, normal oxygen saturation and unremarkable other findings. Tests table (1). CXR was unremarkable. Given his febrile illness, respiratory and gastrointestinal symptoms his COVID-19 PCR nasopharyngeal swab came positive. Although the initial assessment was compatible with COVID-19 infection, travel history, severe thrombocytopenia discrepant to disease assessment, prompted further evaluation with peripheral blood smear which established concomitant infection with P. vivax (Fig 1 A and B). He was commenced on parenteral then oral Artemisinin followed by primaquine eradication therapy with complete resolution of symptoms and normalization of his laboratory tests.

Discussion:

With the evolving COVID-19 pandemic, we advocate a systematic approach to any acute illnesses since they might conceal other hidden conditions including serious infectious diseases(2). Obtaining the relevant history including travel is of paramount importance to reach the correct assessment. Malaria remains one of the foremost imported infections in non-endemic areas where vigilance can avoid catastrophic consequences(3).

FIS 2021
Federation of Infection Societies Conference
Friday 5 November | Manchester Central, UK
Monday 8 - Tuesday 9 November | Online
Hosted by BIA
British Infection Association

77: Ecthyma gangrenosum: a rare manifestation of Stenotrophomonas maltophilia infection in AML patient.

Dr Wael Goravey[1], Dr Gawahir A. Ali[1], Dr Ali S. Omrani[1]
[1]*Hamad Medical Corporation,1Department of Infectious Diseases, Communicable Diseases Centre, Doha, Qatar*

Abstract:

Ecthyma gangrenosum (EG) is a cutaneous infection typically associated with Pseudomonas aeruginosa. However, it is rarely can be caused by Stenotrophomonas maltophilia. We describe this case to avoid delays in the diagnosis and treatment of this devastating infection.

Case Description

A 32-Year-old female newly diagnosed with AML on a 7 + 3 chemotherapy regimen developed fever and right inguinal tender skin lesion for three days duration. Examination revealed pyrexia of 38.40 C, 1-2 cm tender red papule in the right inguinal area which progressed the day after to a larger necrotic hemorrhagic vesicle which eventually ruptured (Figure 1). Investigations showed an ANC of 0.00, Platelets 35×109/L, CRP 233 and Procalcitonin 11. She started on Meropenem and was presumptively diagnosed with EG. Amikacin was added the day after when the fever continued. Blood cultures were negative, and the biopsy was deferred due to thrombocytopenia and profound neutropenia. Gram staining from the ruptured vesicle grew S. maltophilia. The fever settled quickly when Trimethoprim-sulfamethoxazole and levofloxacin were added. Later, S. maltophilia turn to be sensitive to both antibiotics which were continued for two weeks. The lesion showed an impressive clinical response and healed completely within 3 weeks.

Discussion:

S. maltophilia is emerging as an important opportunistic nosocomial infection rarely reported to cause EG(1). Early diagnosis and effective therapy of Ecthyma gangrenosum are essential to avoid progression to life-threatening systemic infections (2). Therefore, S. maltophilia should be considered in the list of the differential diagnoses when dealing with EG in hematological malignancy.

78: An opportunity for antimicrobial stewardship? Assessing the diagnosis and treatment of lower urinary tract infections among inpatients aged 65 and older in a large English teaching hospital

Ms Shauna Henry[1], Mrs Abimbola Olusoga[1]
[1]*Leeds Teaching Hospital Nhs Trust, Leeds, UK*

Background

UK bacteraemia rates have steadily increased in recent years and are associated with a rise in Gram-negative infections. Urinary tract infections are a consistent source of Gram-negative infections, therefore targeted audit and quality improvement could aid antimicrobial stewardship (AMS).

Method

A prospective study of inpatients prescribed antimicrobials for lower UTI (LUTI) was conducted from September 2020- November 2020. The study aimed to evaluate if LUTI was diagnosed in accordance with Public Health England guidance, treated as per Trust guidelines and the impact an AMS pharmacist interventions had on treatment.

Results

87 patients were audited against the criteria:

• Documentation of UTI symptoms = 74%

• Urine dipstick was not used for diagnosis = 69%

• Appropriate antimicrobial was prescribed = 76%

As a treatment pathway 40% (35 patients) met all 3 criteria required to accomplish compliance to the diagnosis and treatment of LUTI.

Of the 24% of antimicrobial prescriptions deemed inappropriate common themes included:

• Resistance

• Insufficient eGFR

• Inappropriate antimicrobial choice

An AMS pharmacist contacted clinical teams to discuss treatment for the 24% of inappropriate antimicrobials, resulting in 92% of the antimicrobials being changed. Increasing appropriate antimicrobials prescribed from 76% to 99%.

Conclusion

The results show poor adherent to all steps in the pathway, and warrants further quality improvement work. The interventions of an AMS pharmacist to positivity impact the appropriate prescribing of antimicrobials in UTI appears to be significant. This could be a potential tool for targeted AMS in relation to the treatment of UTI.

79: Implementing national surveillance of disseminated gonococcal infection: preliminary findings from cross-sectional survey data in England, 2020-2021

Ms Rachel Merrick[1], Ms Qudsia Enayat[1], Ms Rachel Pitt[1], Dr Michaela Day[1], Ms Louise Thorn[1], Dr Hamish Mohammed[1], Dr Michelle Cole[1], **Dr Helen Fifer[1]**

[1]*Public Health England, London, United Kingdom*

Background:

Disseminated gonococcal infection (DGI) is caused by the spread of Neisseria gonorrhoeae (NG) into the bloodstream and can lead to severe illness. We established a surveillance system for DGI in England to quantify the burden of disease.

Methods:

In June 2020, all sexual health clinicians in England were asked to retrospectively (<1 year) and prospectively report DGI cases to Public Health England (PHE). Case finding was conducted for NG isolates confirmed by the national reference laboratory from sterile sites from June 2019 onwards. A secure web-based survey was shared with clinicians to collect enhanced data. Individuals with culture- or 16S rDNA-positive NG at a sterile site were classified as confirmed cases. Probable cases were defined as individuals with culture- or nucleic acid amplification test-positive NG from a non-sterile site with clinical manifestations of DGI.

Results:

Eleven cases of DGI (seven confirmed, four probable) were reported from June 2020 to June 2021. Among the confirmed cases, NG was identified in joint or synovial fluid in six (86%). Ten of eleven cases (91%) were among men, seven of whom identified as gay or bisexual. The median age of those affected was 27 years old (IQR: 25-43 years) and three of eleven (27%) were living with HIV.

Conclusion:

Historically, DGI is estimated to occur in 0.5-3% of individuals with untreated gonorrhoea. With 70,936 gonorrhoea diagnoses reported nationally in 2019, our data likely underestimate prevalence. Microbiologists are requested to send NG isolates for (suspected) DGI cases to the PHE reference laboratory.

80: Daptomycin susceptibility testing and therapeutic use in Enterococcal Blood Stream Infection (EBSI) in NHS Lothian

Dr John Kelly[1], Mr Luke Tysall[1], Dr Simon Dewar[1]
[1]*NHS Lothian, Edinburgh, Scotland*

Background: There is in vitro and clinical evidence to suggest Daptomycin has good activity against Enterococcus. In 2019, CLSI produced clinical breakpoints for Enterococcus spp. EUCAST takes the position that there is 'insufficient evidence' to define Daptomycin breakpoints for Enterococcus spp. In NHS Lothian, Daptomycin susceptibility testing and therapeutic use for EBSI is under the guidance of an infection specialist.

Methods: We investigated all EBSI in a large Scottish health board over a 21 month period, and identified isolates tested against Daptomycin. We recorded indications for Daptomycin susceptibility testing, and the distribution of MICs. Daptomycin doses were recorded where it was used, as were any adverse reactions. Survival was reviewed to the end of the period of data collection.

Results: There were 293 blood culture isolates of Enterococcus spp of which 37 had Daptomycin susceptibility performed, from 31 individual patients. Daptomycin testing was indicated by Vancomycin resistance in 24/37 isolates. All E. faecium isolates tested were in the CLSI 'susceptible-dose dependent (SDD)' range of MICs. All other Enterococcus spp. tested were in the 'susceptible' range. 12 patients received Daptomycin, and dosing information was recovered for 10. 9 of these patients received CLSI-recommended 8-12mg/kg dosing for E. faecium . There were no recorded adverse drug reactions to Daptomycin. 10/12 patients were all alive at the time of data collection.

Conclusions: Daptomycin MIC distribution for EBSI isolates suggests a high local rate of susceptibility, according to CLSI breakpoints. CLSI recommended doses of Daptomycin were used, with encouraging survival outcomes in several patients.

81: Clinical characteristics and outcome of Enterococcus Species Blood Stream Infections: a single-center 10 years observational study.

Dr A.Ali Gawahir[1], Dr Wael Goravey[1], Dr S.Najim Mostafa[2], Dr M.Shunnar Khaled[2], Dr I.Ibrahim Shahd[2], Dr Ali.S Omrani[1], Dr Hamad Abdel Hadi[1]

[1]Hamad Medical Corporation,1Department of Infectious Diseases, Communicable Diseases Centre, [2]Hamad Medical Corporation,2Department of internal medicine

Background

Enterococcus bacteremia is an infection with significant mortality, particularly among patients with comorbidities. Mortality rates ranged between 21.4% and 64.2%(1). Little data exists regarding enterococcal bacteremia in the middle East. Therefore, we aimed to describe the clinical characteristics and outcomes in order to better understand and develop prevention strategies.

Methods

A single-center, retrospective study conducted across a tertiary hospital in Doha, Qatar between January 2009 and December 2018. Inclusion criteria were age >14 years and at least one positive blood culture for Enterococcus spp. Medical records were reviewed, and data were collected.

Results

263 patients met the inclusion criteria. The mean age was 63 years (IQR 48 – 74 years), and 65% were men. E. faecalis and E. faecium were 193 (73.38%) and 53 (20.15%) respectively. The mean Pitt Bacteremia Score was 3.00 (IQR 0.00-8.00) and CCS was 4.00 (IQR 2.00-7.00). The source was uncertain in 119 patients (45.25%). Appropriate empirical antibiotics were administrated in 250 (95.06%) patients; however, the mortality by day 30 was 175 (66.54%).

Conclusions

- A significant number of patients had comorbidities or medical devices as risk factors for bacteremia.

- Lines-related infections are the most identified source, while no sources were detected in the majority.

- VRE does not pose a significant issue and Linezolid was better than Daptomycin in terms of in vitro sensitivity.

-Despite rapid clearance of the bacteremia and an appropriate empirical antibiotic, the 30 day mortality is high, possibly related to significantly associated comorbidities(2)(3).

82: Antimicrobial prophylaxis stewardship associated with low surgical site and early infection rates after liver transplantation

Dr Katrina Pekarska[1], Dr Rebecca Jones[1], Dr Fiona McGill[2]

[1]Leeds Teaching Hospitals NHS Trust, Department of Hepatology, Leeds Liver Unit, Leeds, UK, [2]Leeds Teaching Hospitals NHS Trust, Department of Microbiology, Leeds, UK

Surgical site infections (SSI) arise in 17-25% of liver transplant recipients, and bacterial infections in 30%, and are a substantial cause of mortality. Multi-drug resistant organisms (MDRO - methicillin resistant Staphylococcus aureus (MRSA) and Carbapenemase Producing Enterobacterales (CPE)) can pose additional risk. We audited our unit's approach to post-transplant infection. This includes a standard SSI prophylaxis regimen, with personalisation if MDROs are identified through screening or in pre-transplant infections.

We retrospectively reviewed records of transplant wait-listed patients from April'18 - March'19. Data on demographics, CPE, MRSA testing, pre-transplant infection, surgical antimicrobial prophylaxis, SSI + 90 day post-transplant infection rate were collected.

78 patients (mean age – 54.2 years) were wait-listed for transplantation. 56 patients received a liver transplant. Mean MELD + UKELD scores were 13.7 + 52.8 respectively. The commonest indications were alcohol related liver disease (30.8%) + hepatocellular carcinoma (29.5%). MRSA + CPE screening was done in 100% of patients. All MRSA swabs were negative, two CPE swabs positive. 14 patients developed 20 infections pre-transplant, 3 with MDRO. These findings necessitated a change from standard SSI prophylaxis in 2 recipients.

There were 12 early post-transplant infections in 11 patients (19.6%), including 4 SSIs (7%).Two deaths were related to intra-abdominal sepsis, neither from MDRO. Mortality from SSI or early bacterial infection was 3.5%.

We have good adherence to local pre-listing MRSA and CPE screening guidelines. Rates of SSI + MDRO infections are low in our unit. Mortality related to SSI remains a concern, highlighting the need to maintain low rates.

83: Beware the pseudo-IBD flare - An atypical cause of colitis, pancytopenia and splenic abscesses in a patient treated with anti-TNF therapy for ulcerative colitis

Dr Peter Nelson[1], Dr Kate Jackson[1]
[1]*Belfast Health And Social Care Trust, Belfast, UK*

A 23 year old male patient with a history of ulcerative colitis and primary sclerosing cholangitis managed with Adalimumab and Mesalazine presented with a six week history of weight loss, lethargy and subjective fever in October 2020. He also had a history of recurrent Clostridioides difficile.

On admission he was initially managed as an acute exacerbation of ulcerative colitis with high dose steroids. Three sets of blood cultures taken over a 36 hour period flagged positive, with Yersinia pseudotuberculosis being isolated in all three. Streptococcus gordonii and Staphylococcus epidermidis were also isolated in one out of three cultures. Immunosuppressant therapy was held and he was initially treated with Pipercillin-Tazobactam, Fluconazole and Gentamicin.

The patient failed to improve clinically and treatment was switched to Meropenem and Vancomycin. Imaging of his thorax, abdomen and pelvis demonstrated mutifocal hypoattentuated splenic lesions in keeping with abscesses and rectosigmoid colitis. Subsequently the patient developed pancytopaenia

A possible diagnosis of Yersiniosis was discussed with his gastroenterology consultant, but given clinical deterioration he proceeded to have an emergency laparotomy with concurrent bone marrow aspiration, splenic biopsy, and subtotal colectomy.

This gentleman was eventually diagnosed with secondary Haemphagocytic Lymphohistiocytosis, which was treated successfully with Anakinra and steroids. After a prolonged admission he was discharged home with the OPAT service to complete a course of intravenous Ceftriaxone and Metronidazole. Interval imaging demonstrated abscess resolution and the patient has fully recovered.

85: A surprising source of Staphylococcus aureus bacteraemia

Dr Jessica Megan Gurney[1], Dr Sulman Hasnie, Dr Alina Negut, Dr Harry Bardgett
[1]*Bradford Teaching Hospitals NHS Foundation Trust, Bradford, United Kingdom*

Introduction:

Staphylococcus aureus, although known to cause a range of serious systemic infections, is a rare cause of prostatic abscesses.

Case description:

A 72-year-old male with a background of type 2 diabetes mellitus presented to Accident & Emergency at Bradford Royal Infirmary, UK with abdominal pain, haematuria, and a 3-month history of recurrent urinary tract infections (UTI).

On admission, he was pyrexial and found to be in urinary retention, with an enlarged 50g prostate and a stage 3 acute kidney injury.

When blood cultures grew Staphylococcus aureus, intravenous flucloxacillin was started. After 6 days he was discharged with oral flucloxacillin, a long term-catheter, and a plan for transurethral resection of the prostate.

An outpatient computed tomography (CT) scan of his abdomen and pelvis revealed a 72 mm prostatic collection. He was readmitted under urology and started on intravenous tazocin. A CT guided drainage showed the abscess had progressed into the mesorectum, with the largest transaxial measurement at 10cm.

The MC&S confirmed a methicillin-sensitive Staphylococcus aureus prostatic abscess. Intravenous flucloxacillin was commenced and given for 3 weeks before switched to oral co-trimoxazole.

One month later the patient was admitted with haematuria, but a repeat CT showed no reaccumulation. He was treated with trimethoprim for a catheter associated UTI and planned for follow up in urology clinic.

Conclusion:

This case exemplifies the importance of considering CT findings and available cultures to direct antimicrobial choice and treatment duration.

The clinical history and rarity of Staphylococcus aureus prostatic abscesses could have diverted the diagnosis.

86: Use of Multinational Association of Supportive care in cancer (MASCC) scoring for risk stratification and identification of patients for early discharge when presenting with febrile neutropenia to a hospital in East London.

Dr Khalid Abdul Basit[1], **Dr Radhika Priyadharshi[1]**, Ms. Heather Howton[2], Dr. Shanthini Crusz[2], Dr. Sherine Thomas[1,3]

[1]Department of Acute medicine, Whipps Cross University Hospital, London, United Kingdom, [2]Department of Oncology, Whipps Cross University Hospital, London , United Kingdom, [3]Department of Infectious Diseases, Whipps Cross University Hospital , London, United Kingdom

Introduction: We present a quality improvement project monitoring the use of MASCC scoring, in management of patients presenting with febrile neutropenia, at Whipps Cross University Hospital, East London.

Methods: We performed a retrospective quality improvement project of febrile neutropenic patients with solid organ tumours, aged >16years admitted through the medical take, between December and May 2018-19 and the same time period in 2020-21. Between the two cycles a teaching program was rolled out to the staff in the hospital, educating them on MASCC scoring and how to use this to help with early discharge decisions. Electronic health record data was reviewed for choice of antibiotics used and adherence to local antibiotic guidelines, use of MASCC scoring and length of hospital stay (LOS). Data was analyzed using SPSS version 20.0.

Findings: 28 patients were identified in cycle one and 15 in cycle two. Admissions with MASCC scores of ≥21 were noted in 54% in cycle 1 which dropped to 27% in cycle 2, which can be explained by the provision of extra out-patient services during the Covid-19 pandemic. The median LOS for low-risk patients was 4 days and 5.5 days between cycle 1 and 2 respectively. Implementation of the use of MASCC scoring occurred in 86% of the patients reviewed.

Conclusion: The on-going pandemic has led to a change in the severity of patients being seen and admitted to hospitals. Early discharges and outpatient follow-up in low-risk neutropenic patients may be guided by MASCC scoring.

87: A rare case of paediatric visceral Leishmaniasis in North-western Pakistan

Dr Shahzeen Saifullah Khan[1,2,3,4], Dr Muhammad Hasan Shahab[1,3,4]

[1]University Hospital Southampton Nhs Foundation Trust, Southampton, United Kingdom, [2]Shrewsbury and Telford NHS Trust, Telford, United Kingdom, [3]Memon Medical Insitute Hospital, Karachi, Pakistan, [4]Dr. Ruth K.M Pfau Civil Hospital Karachi, Karachi, Pakistan

Visceral leishmaniasis (VL) is an oft-neglected and rampantly misdiagnosed, vector-borne parasitic disease. An endemic in many developing countries, VL is transmitted by the bite of an infected female phlebotomus sand fly and if left untreated, it can be fatal. Leishmaniasis manifests in three main forms: visceral leishmaniasis (VL, also known as Kala-azar), cutaneous leishmaniasis (CL), and mucocutaneous leishmaniasis (ML).

We present here a case of VL in five-year-old boy, from an otherwise CL endemic region in Pakistan, with no previously reported cases of VL. He presented to us with a history of intermittent, high-grade fever, pallor, abdominal pain that was localized to the left side and abdominal distention for the past two and a half months. After negative tests for common infectious conditions in the region, VL was ultimately diagnosed on a bone marrow biopsy which demonstrated histiocytes filled with the characteristic Leishmania Donovani bodies. After five weeks of treatment with intravenous amphotericin B deoxycholate our patient's condition improved significantly .

To our knowledge, this may be the first reported case of VL from Northwestern Pakistan that was successfully diagnosed and treated. Understandably, the difficulty in diagnosis stems partly from a prolonged incubation period and a clinical presentation that overlaps with other conditions like malaria, brucellosis, tropical splenomegaly syndrome, schistosomiasis, tuberculosis, and others. This is further complicated by a paucity of basic healthcare and diagnostic facilities in VL endemic regions of Pakistan. Our report serves to higlight VL as a possible differential in patients with similar presentations from leishmaniasis-endemic areas.

88: Factors influencing the effectiveness of handrubbing with alcohol-based handrubs for healthcare staff: systematic review

Dr Lucyna Gozdzielewska[1], Prof Lesley Price[1], Mr Julius Cesar Alejandre[1], Miss Annelysse Jorgenson[1], Dr Emma Stewart[2], Prof Didier Pittet[3], Prof Jacqui Reilly[1]

[1]Glasgow Caledonian University, Glasgow, United Kingdom, [2]University of Glasgow, Glasgow, United Kingdom, [3]Infection Control Programme and WHO Collaborating Center on Patient Safety; The University of Geneva Hospitals and Faculty of Medicine, Geneva, Switzerland

Background: Specific guidelines exist for the application technique of alcohol-based handrub (ABHR) in healthcare. However, factors such as, ABHR volume, application time, friction pressure and hand size can influence the effectiveness of handrubbing. Thus, the aim of our systematic review was to evaluate the influence of these factors when handrubbing with ABHR on bacterial load reduction, hand surface coverage or drying time.

Methods: Studies published between 1980-2021 were searched in MEDLINE, CINAHL, Web of Science and ScienceDirect. The review considered primary research studies conducted in healthcare or laboratory settings, investigating the aforementioned factors and with outcome measures related to bacterial load reduction, hand surface coverage or ABHR drying time. Two reviewers independently performed data extraction and quality assessment using Cochrane Effective Practice and Organization of Care risk of bias criteria.

Findings: Twenty studies were included. The results showed that as ABHR volume increased, bacterial load reduced and ABHR drying times increased. However, the evidence around application time was inconsistent, while the only study investigating the influence of the rubbing friction on bacterial load reduction showed that sprayed ABHR without handrubbing was inferior to poured or sprayed ABHR with rubbing. All studies were assessed as high risk of bias and were heterogeneous in study designs, application time, application technique ABHR volume, and product.

Conclusions: Future research on hand hygiene technique should include these potentially confounding factors in study design considerations and attempt to homogenise research procedures. In the meantime, current hand hygiene guidelines should be followed in healthcare settings.

89: International Survey exploring humanitarian aid workers' learning needs in antimicrobial stewardship

Ms. Adama Ndaw[1], **Dr Conor Bowman[1]**, Dr Kate Clezy[2], Dr Rupa Kanapathipillai[1]
[1]Médecins sans Frontières, Paris, France, [2]Médecins sans Frontières, Amsterdam, The Netherlands

Background:

Continuing the fight against antimicrobial resistance (AMR), Médecins sans Frontières (MSF) have created local antimicrobial stewardship (AMS) roles in select projects and are also launching an AMS e-learning tool. A survey was conducted assessing current AMS learning needs of field workers.

Method:

126 capacities (within 7 broad categories) were conceived by a pedagogy scientist and a context expert, within the framework of Bloom's taxonomy of knowledge, and based on international guidance. The survey was conducted via SurveyMonkey.™ It was open to MSF field staff only, and was closed when 100 responses were received. Responses in each category were classed as; starter, intermediate or advanced learner status.

Results:

100 complete responses were received, the majority of these from Sub-Saharan Africa (46%, n=46) and the Middle East (28%, n=28). The majority of respondents were doctors (47%, n=47), and pharmacists (17%, n=17). The remainder were nurses and managers.

107 of 126 capacities were classed as starter, and the remaining 18 intermediate.

Examples include:

• 100% (n=13/13 capacities) responses classed as starter in category "revision of antibiotic class and spectrum."

• 59% (n=24/41 capacities) responses classed as starter in category "principles of AMS."

• 94% (n=15/16 capacities) responses classed as starter in category "measuring impact of an AMS programme."

Conclusion:

The survey reveals significant knowledge gaps in AMS and AMR. These data can be used to inform further development and delivery of e-learning content. As far as we are aware, this is the first survey of this kind in a humanitarian setting.

90: High Fidelity Ward-Round Simulation for Antimicrobial Stewardship

Dr Daniel Slack[1], Dr Stephanie Dundas[2]

[1]NHS Lanarkshire Medical Education, , Scotland, [2]NHS Lanarkshire, Infectious Diseases, , Scotland

Antimicrobial Stewardship programmes (ASPs) are widely used to improve antimicrobial resistance awareness and educate healthcare professionals about good principles of antimicrobial usage. The Scottish Antimicrobial Prescribing Group (SAPG) developed the Hospital Antibiotic Review Programme (HARP), which sets out key principles of antimicrobial prescribing to reduce the burden of resistance. Although ASPs deliver increased knowledge, evidence from local stewardship teams shows this does not always translate into practice.

High-Fidelity simulation (HFS) is ubiquitous in medical education and a key advantage is generation of behaviour change. HFS has not been applied to antimicrobial stewardship before.

Our aim was to design a novel ASP using HFS to generate increased behaviour change with respect to antimicrobial prescribing.

Method

We designed a HFS ward-round, with three low-acuity simulated patients that specifically targeted antimicrobial stewardship principles, including those highlighted by HARP.

We looked at the effects of the simulation by comparing the responses to pre- and post-course questionnaires.

Results

100% (n=7) of students strongly agreed that the course was fun, effective at teaching antimicrobial stewardship principles and would be recommended to peers. An increase in confidence was found related to application of knowledge of oral bioavailability and IVOST, as well as application of knowledge of cation interactions and recognition of treatment failure, in addition to improved post-course scores across other testing areas such as knowledge of OPAT services, use of culture results and selection of antimicrobials.

Conclusions

HFS is an effective way to teach antimicrobial stewardship principles and increases confidence in different areas of antimicrobial prescribing.

92: Challenging spinal infection in a patient with presumed penicillin allergy

Dr Caitlin McGreevy[1], Dr Sulman Hasnie[1], Dr Alina Negut[1]

[1]*Bradford Teaching Hospitals NHS Foundation Trust, Bradford, United Kingdom*

Introduction

Staphylococcus aureus is a common coloniser of skin, however when implicated in cases of bacteraemia it is associated with significant morbidity, mortality and major complications.

Case presentation

A 59-year-old lady presented with severe lumbar back pain and drenching night sweats. She had tenderness over her lumbar vertebrae and paraspinal muscles and had significantly raised inflammatory markers. Several blood cultures grew methicillin-sensitive S. aureus. An MRI spine revealed multiple paraspinal collections, pyomyositis, facet joint septic arthritis and epidural collections. The patient reported a history of anaphylaxis to penicillin, therefore she was treated with intravenous teicoplanin and was planned for discharge on outpatient intravenous antibiotic therapy. Unfortunately, she had a breakthrough episode of fever whilst on teicoplanin and so antibiotic therapy was changed to vancomycin. Further spinal imaging revealed extensive epidural collections and features of spinal osteomyelitis. Due to signs of neurological compromise, she was transferred to a neurosurgical unit where she underwent decompression surgery. After careful consideration of the options for outpatient therapy, and discussion with the patient regarding her historical report of anaphylaxis to penicillin as a baby, the decision was made to undergo a trial of flucloxacillin. She was given 500mg flucloxacillin orally and had no reaction. She was successfully discharged on outpatient intravenous flucloxacillin therapy and continued to make a good recovery.

Conclusion

This case demonstrates the importance of careful documentation and investigation of allergic reactions to antibiotics. Despite advancements in surgical interventions for deep-seated infections, penicillin remains the mainstay of treatment for invasive staphylococcal infections.

94: Outbreak with Carbapenem-resistant Acinetobacter baumannii and possible outbreak with Vancomycin resistant Enterococcus faecium among COVID 19 patients admitted to an intensive care department

MD, PhD Raluca Datcu[1], Senior Scientist Henrik Hasman[2], Nurse Anja Dyrgaard Rathmann[1], Senior Medical Doctor Mariusz Boczan[3], Senior Medical Doctor Karen Doris Bødker[3], Senior Medical Doctor Frank Østergaard Hansen[4], Senior Medical Doctor Ricardo Sanchez Garcia[3], Senior Microbiologist, PhD Zhijun Song[1], Professor in Clinical Microbiology John Eugenio Coia[1,5]

[1]Department of Clinical Microbiology, Sydvestjysk Sygehus, Esbjerg, Denmark, [2]Microbiology and Infections control, Statens Serum Institute, Copenhagen, Denmark, [3]Department of Intensive Care and Anesthesiology, Sydvestjysk Sygehus, Esbjerg, Denmark, [4]Department of Intensive Care, Odense University Hospital, Odense, Denmark, [5]Department of Regional Health Research IRS, University of Southern Denmark, Denmark

Introduction and objectives We describe an outbreak with carbapenem-resistant OXA 23-producing Acinetobacter baumannii in five COVID-19 patients admitted to intensive care. There was also cross-transmission of Vancomycin-resistant Enterococcus faecium (VRE) between two patients. The objective was to show that infection control interventions can terminate an outbreak.

Methods Susceptibility testing was performed according to EUCAST. Carbapenem-resistant A. baumannii and Vancomycin-resistant E. faecium were analyzed by whole genome sequencing (WGS). Interventions: daily cleaning and disinfection with alcohol was performed. Rooms were additionally alternately shut-down, manually cleaned and disinfected twice with sodium hypochlorite. Equipment was separated, cleaned and disinfected. Staff changed gloves, gowns, eye-protection and masks between MDR A. baumannii patients and other COVID-19 patients from the cohort room.

Results The outbreak lasted 20 weeks, and involved five patients (four men and one woman). The median age was 70 years (range 49-77) and median length of stay was 23 days (range 9-38). All were mechanically ventilated. Two out of five patients died. All patients yielded closely related OXA 23 A. baumannii ST195-CT2045 in tracheal secretions (four with ventilator-associated pneumonia, one colonized) and two had blood isolates. Analysis of the VRE isolates yielded ST203-CT20. All but one environmental samples were negative (one washbasin drain positive). After the outbreak ended, a 6th patient yielded carbapenem-resistent OXA 23 A. baumanii, but WGS showed no clonal relation with outbreak isolates.

Conclusions The outbreak occurred during a period of cohort nursing of COVID-19 patients due to bed pressures. Increased hygienic measures prevented further infections.

95: Monitoring outcomes of diabetic foot osteomyelitis in a District General Hospital and identifying potential areas of improvement

Dr Farhana Butt[1], Dr Rekha Lopez[1], Mr Zaheer Mehar[1]
[1]*Chelsea And Westminster Nhs Foundation Trust*

Diabetic foot infections carry a significant morbidity and mortality as well as financial impact on the NHS. 1

The main aim of our project was to compare methods used to diagnose diabetic foot osteomyelitis in our hospital compared to national and international guidelines. We also monitored outcomes of our cohort over 12 months to potentially identify risk factors for poorer outcomes as well areas of improvement in management.

Patients were analysed retrospectively for one year. Parameters measured include patient demographics, methods used to make the diagnosis, duration of antibiotics, route of antibiotics given, surgical/vascular interventions and patient outcomes at end of episode,3 and 6 months. The two standards that we used to compare our practice to are those outlined in NICE Guidelines and by International Working Group on Diabetic Foot (IWGDF) 2019.2

We compared outcome data to that published in a large prospective study. 3

In our cohort after 6 months, 27% had good outcome (osteomyelitis free, improved or stable), 25% had progression, recurrence or needed surgical intervention, and 14% died. Mortality rates were comparable, however there is scope for improvement in outcomes in our cohort.

Peripheral vascular disease was present in 2/3rds of our cohort and was a significant risk factor for poorer outcomes. Early identification and treatment of peripheral vascular disease could potentially improve outcomes of diabetic foot osteomyelitis. Whilst there was no significant difference with duration of antibiotic therapy, there could be an option for reducing the duration of intravenous antibiotic therapy in favour of oral therapy.

References:

1. NICE Guidelines: Diabetic Foot Infections: Prevention and Management 2019

2. Guidelines on the diagnosis and treatment of foot infections in persons with diabetes (IWGDF 2019 update)

3. Ndosi M, Wright-Hughes A, Brown S, et al. Prognosis of the infected diabetic foot ulcer: a 12-month prospective observational study. Diabet Med. 2018;35:78-88.

96: Diagnosis and Management of Urinary Tract Infections in Acute Admissions at an East London Hospital: Ongoing Quality Improvement Project

Dr Alice Coady[1], **Dr Isabelle Whelan[1]**, Dr James Watson[1], Dr Olivia Lucey[2], Dr Sherine Thomas[1,2]
[1]Department of Acute Medicine, Whipps Cross University Hospital, Barts Health, London, UK,
[2]Department of Infectious Diseases, Whipps Cross University Hospital, Barts Health, London, UK

Introduction: We present a follow-up retrospective audit of diagnosis and management of urinary tract infections (UTI) at Whipps Cross University Hospital, East London, in August 2020. A 2018 audit at the hospital found most patients diagnosed with UTIs were not treated according to NICE and local guidelines.

Methods: 135 patients were included with a coded discharge of UTI or urosepsis. Data were collected from electronic patient records including demographics, presence of lower urinary tract symptoms (LUTS), presence of a long-term catheter (LTC), urinalysis results, urine and blood culture results, and antimicrobial treatment. Results were compared to NICE and local guidelines for the diagnosis and management of UTIs.

Findings: 68% of patients treated for UTI were aged 65 or over. This group were more likely to present with atypical symptoms, such as altered mental state. Many patients were treated following negative urinalysis results, against local guidelines. Only 57% of patients had sufficient evidence for the diagnosis of UTI. The choice of antibiotic was appropriate in 73% of cases. 55% of cases were given the correct antibiotic duration, however this is an improvement from the 2018 audit, which found correct durations in 26% of patients. Of 12 patients with LTC, only 7 were documented to be changed.

Conclusion: This follow-up audit highlights the continued need for clear diagnostic guidelines for UTIs. Regular teaching on UTI diagnosis and management, particularly for elderly patients and those with LTCs, continue to be beneficial and promote antimicrobial stewardship, but need to be repeatedly implemented and reviewed.

97: Gram-Negative Bacteraemia at a District General Hospital: Predicting Outcomes and Identifying Areas for Improvement

Dr Natalya Ellis[1], Dr Farhana Butt[1], Mr Oliver Troise[1], Dr Rekha Lopez[1]
[1]*Chelsea and Westminster NHS Foundation Trust*

Gram-negative bloodstream infections (BSI) are an important cause of morbidity and mortality worldwide and in UK(1, 2).

Our project aims were firstly, to identify a scoring system and independent risk factors that could predict outcomes in hospital in-patients with a Gram-negative BSI. Secondly, to review antimicrobial use in our patient population, with a view to identifying improvements.

We conducted a literature review of validated scoring systems that would be applicable to our patient population and use readily available clinical information. We selected the Pitt Bacteraemia Score (PBS), the Bloodstream Infection Mortality Risk Score (BSIMRS) and the Sequential Organ Failure Assessment (SOFA).

We conducted a retrospective analysis of online medical records of adult patients with a Gram-negative BSI between November 2020 and January 2021 (n=52), recording patient age, co-morbidities, Covid-19 status, source of infection, organism, sensitivities, PBS, BSIMRS and SOFA scores, antibiotic therapy (duration, route, agents) and patient outcomes.

Our data demonstrated that the BSIMRS was able to predict poor outcomes within our patient cohort. We identified that Covid-19 and Gram-Negative BSI coinfection was an independent risk factor for ITU admission and death, especially in patients with a urinary or unknown source (100% of patients).

Our analysis identified timely aminoglycoside administration as an area for improvement, with only 45% of patients who died having received aminoglycoside within 24 hours. Our analysis also demonstrated a median duration of 6 days IV antibiotic therapy in patients with good outcomes, suggesting a potential role for use of BSIMRS in guiding earlier oral stepdown.

98: Safely adopting a urine microscopy white cell count screening threshold to reduce the number of urine samples cultured in the North West London Pathology Lab

Dr Stephanie Rimmer[1], Dr Jen Low[1], Dr Hugo Donaldson
[1]*Imperial College Healthcare NHS Trust*

Background

The Northwest London Pathology lab processes urine samples from across two NHS trusts. The recent addition of a third NHS trust has significantly increased the number of urine samples being cultured. We aim to determine whether a white cell count (WCC) screening cut-off of 50/cmm could safely reduce the number of samples sent for culture using the Medarini SediMAX conTRUST analyser.

Methods

Urine samples with WCC <50/cmm on microscopy between 12/3/20 and 7/4/20 were obtained. A random number generator was used to select 100 of these samples. The samples and the patient record were reviewed, looking at multiple factors, to determine the significance of any organism growth in correlation with the clinical scenario.

Results

Of the 100 samples there was growth in 23. Of the 23 positive samples 15 (65%) did not correlate with clinical symptoms or risk and were deemed clinically insignificant. Of the remaining eight, two were regarded as clinically significant. In one case the patient was symptomatic and treated empirically. The second was a mis-labelled nephrostomy sample which by default would have been cultured had it been identified as such.

Conclusion

We demonstrated that, assuming clinical assessment pre-dominates, and clinicians are using culture as a supportive test rather than a diagnostic test then the threshold for culture of >50 WCC is unlikely to result in any unidentified but clinically significant urinary pathogens. We can safely implement this threshold and reduce the burden of urine culture processing for lab staff, therefore, reallocate staffing and resources.

100: Risk factors for antibiotic resistance in patients with Escherichia coli (E. coli) bacteraemia related to urinary tract infections (UTIs)

Dr James Balfour[1,2], Miss Mabel Barclay[3], Dr Janathan Daniel[1,2], Dr Carol Philips[1,2], Dr Michelle Etherson[1,2], Dr Meghan Perry[1,2], Dr Naomi Henderson[1,2]
[1]NHS Lothian Infection Service, Edinburgh, Scotland, [2]Edinburgh Clinical Infection Research Group, Edinburgh, Scotland, [3]Public Health Scotland, Edinburgh, Scotland

Introduction

NHS Lothian policy has recently changed to avoid first-line use of trimethoprim for uncomplicated UTIs in patients with risk factors for resistance, in line with NICE guidance. This study aimed to identify local risk factors for antibiotic resistance in Escherichia coli bacteraemias related to UTI.

Methods

A retrospective cohort study of 687 patients with E. Coli bacteraemia related to UTI in NHS Lothian from 01/02/18-29/02/20. Duplicates were excluded. Demographics, clinical data, and co-morbidities were collected from TRAK(electronic patient records). Community antibiotic prescribing and microbiology data were collected from Prescribing Information System(PIS) and APEX respectively. Univariate analysis and multivariate logistic regression using RStudio examined risk factors for trimethoprim resistance(TR) and multi-drug resistance(MDR). MDR was defined as resistance to at least 1 drug in >3 antibiotic categories.

Results

TR was found in 282/687(41%) bacteraemias. Multivariate modelling showed increased TR in previous urinary TR E. Coli(OR=8.56, P<0.001), previous antibiotic prescription(OR=2.05, P<0.001), trimethoprim prescription(OR= 2.71, P<0.001), trimethoprim course number(OR=1.66, P<0.001), antibiotic course number(OR= 1.24, P<0.001), and prophylactic antibiotic prescription(OR=3.03, p=0.003). MDR E. coli were found in 278/687(40.5%) bacteraemias, 226/278(81.3%) were TR. Predictors of MDR included previous antibiotic prescription(OR=1.87, P<0.001), antibiotic course number(OR=1.26, P<0.001), trimethoprim(OR=1.96, P<0.001), nitrofurantoin(OR= 2.17, p=0.002) and prophylactic antibiotic prescription(OR=3.60, P<0.001).

Discussion

The data shows a high prevalence of TR and MDR in patients with E. coli bacteraemia related to UTI. This study supports the withdrawal of trimethoprim from first-line use for UTIs in patients with risk factors for TR and has identified risk factors for MDR in E. coli bacteraemia.

102: An imported case of severe typhoid disease caused by a strain of extensively drug resistant (XDR) Salmonella typhi with a review of current global epidemiology

Dr Emma Carter[1], Dr Anne Melhuish[1], Dr Hugh McGann[1]
[1]*Leeds Teaching Hospital Trust, Leeds, United Kingdom*

Introduction

A strain of XDR Salmonella typhi caused an outbreak in Sindh province, Pakistan in 2016. This strain was resistant to recommended first-line agents by acquisition of a plasmid conferring ceftriaxone and fluoroquinolone resistance. Since then, XDR-typhoid is of increasing public health concern with cases being reported in multiple countries.

Case

A 28-year-old male presented with a 5-day history of non-bloody diarrhoea, lethargy and fever. He had returned from a 2-month trip to Pakistan 48 hours beforehand. He subsequently developed confusion, slurred speech and hearing loss.

He had stayed on a farm in rural Punjab and received multiple insect bites, swam in fresh water, went on safari and consumed the local food and water. He had not sought pre-travel advice or vaccination.

On examination he was obtunded with fever, tachycardia, hypotension, and mild abdominal tenderness. Blood tests showed thrombocytopaenia, deranged liver function, acute kidney injury and raised inflammatory markers.

Blood cultures identified a gram-negative bacillus that was confirmed to be Salmonella typhi resistant to ciprofloxacin, ceftriaxone but sensitive to meropenem and azithromycin.

He was treated with intravenous meropenem for 7 days then switched to azithromycin for a further 7 days. He remained febrile for the first 6 days but subsequently made a full recovery.

Discussion

We recommend that patients who present with a clinical syndrome consistent with severe typhoid, and who report travel to an area with a high incidence of XDR-typhoid, should be treated empirically with intravenous meropenem until the diagnosis has been confirmed and sensitivity results are known.

103: The Use of Immunomodulatory Agents in the Treatment of a Paradoxical Reaction Complicating a Case of Central Nervous System Tuberculosis in an Immunocompetent Patient

Dr Emma Carter[1], Dr Fiona McGill[1], Dr Chloe Walsh[1]
[1]*Leeds Teaching Hospital Trust, Leeds, United Kingdom*

Introduction

Paradoxical reaction complicates approximately one third of central nervous system tuberculosis (CNS-TB), but evidence regarding optimal management is lacking. TNF alpha has been shown to play a central role in the inflammatory response associated with CNS-TB. There are several case reports of the use of various immuno-modulatory agents in paradoxical reaction, including a case series of 4 patients where infliximab (an inhibitor of TNF alpha) was used with symptomatic improvement. We describe a case of paradoxical reaction in CNS-TB managed with steroids, thalidomide and infliximab.

Case

A middle-aged male was diagnosed with drug-sensitive CNS-TB meningitis, complicated by hydrocephalus requiring a ventriculo-peritoneal shunt. HIV test was negative. He had been established on anti-TB therapy with weaning dexamethasone for 1 month when he developed fevers, confusion and drowsiness, with worsening appearances on MRI head, consistent with a paradoxical reaction. The dose of steroids was increased, then after 4 days oral thalidomide was commenced but without improvement. After a further six days he commenced a course of Infliximab. He began to show clinical improvement, with resolution of fevers 4 weeks after the first dose. He remains stable as an outpatient 7 months into anti-tuberculous therapy and 6 weeks after the final dose of Infliximab.

Discussion

This case demonstrates successful management of paradoxical reaction in CNS-TB. It adds to the small number of case reports describing the use of Infliximab. Further evidence is needed, to establish the optimal management of CNS-TB paradoxical reaction including the choice, dosing and timing of immunomodulatory agents.

104: An audit of laboratory requests received for Rare & Imported Pathogens Laboratory (RIPL) in a tertiary hospital

Dr Ciara Mahon[1], Dr Fiona McGill[1], Dr Kavita Sethi[1]
[1]*Department of Microbiology, Leeds Teaching Hospitals NHS Trust*

Background

Choosing Wisely is a national pathology initiative for the NHS Five Year Forward plan to deliver the right test for the right patient at the right time. We receive many tests for Lyme, Dengue, Leptospirosis and Rickettsial disease. These tests are expensive, need to be referred to Rare and Imported Pathogens Laboratory (RIPL) and may represent inappropriate resource use. PHE guidance states that each request should have clinical features and exposure history on the request form.

Aims

To ensure patients who were tested for Lyme, Dengue, Leptospirosis or Rickettsial disease had appropriate diagnostic features and risk factors prior to requesting a test.

Method & Results

We reviewed all our requests to RIPL (n=158) between April 2018 and March 2019. The four most common were Lyme, Dengue, Leptospirosis and Rickettsial (83%). 70% of Lyme, 49% of Dengue, 47% of Leptospirosis and 39% of Rickettsia tests were appropriately requested. This was based on the documented symptoms, risk factors and travel history. Tests were more likely to be appropriately requested if discussed with an infection specialist. We calculated using the price per test data provided by the RIPL service user manual, that inappropriate test requesting cost us £7170.27 in total.

Conclusion

We are currently not meeting the standards for appropriate RIPL test requesting. We need a SOP to guide and educate service users to drive responsible requesting and improve cost-effectiveness of referred tests.

FIS 2021
Federation of Infection Societies Conference
Friday 5 November | Manchester Central, UK
Monday 8 - Tuesday 9 November | Online
Hosted by BIA
British Infection Association

105: Spina Ventosa; Isolated tuberculous osteomyelitis of the little finger: A forgotten differential diagnosis.

Dr A.Ali Gawahir[1], Dr Wael Goravey[1]
[1]Hamad Medical Corporation,1Department of Infectious Diseases, Communicable Diseases Centre, Doha, Qatar

Isolated tuberculous dactylitis is a rare form of extra-pulmonary tuberculosis that frequently eludes assessment and constitutes diagnostic challenges leading to devastating consequences.

A 29-year-old male was referred because of a three-month history of a non-painful ulcer on the left little finger. There was no history of trauma or constitutional symptoms. Examination showed a 2 * 3 cm non-tender, erythematous base ulcer. Inflammatory markers were within normal limits. An X-ray of the hand showed middle phalange osteomyelitis in the left little finger (Figure 1A). Histopathology showed necrotizing granulomatous (Figure 2) whereas MTB (GeneXpert MTB/RIF) was positive with a negative Rifampicin resistance gene. Subsequently, fully sensitive MTB was isolated. A CXR demonstrated no pulmonary involvement. He was started on standard 12 months TB therapy with complete healing of the ulcer, recovery of hand function, and significant improvement of the bony changes (Figure 1B).

Extra-pulmonary TB can affect all sites in the body; hence, isolated TB of the bones in the hands is not exceptional[1]. Tubercular dactylitis, Spina Ventosa (spina, short bone; Ventosa, inflated with air) represents 2%–4% of osteoarticular TB[2]. The bones of the hands are more frequently affected than the feet and the proximal phalanx of the index and middle fingers are the commonest sites for infection[1]. A high degree of suspicion with the aid of appropriate tests can clinch the diagnosis which can imitate many infectious and noninfectious conditions. The mainstay of the management is medical and the optimal treatment duration remains unknown but 9-12 months is suggested[1].

106: 'Antimicrobial Stewardship - Do It Right!' - a clinical awareness based Quality Improvement Project (QIP)

Dr Lee Xin Ting[1], Mrs Duaa Ahmad[1]

[1]*Barnsley Hospital NHS Foundation Trust, Barnsley, United Kingdom*

Background and Objectives:

Based on a recent trust-wide antibiotic stewardship (AMS) audit, three specific AMS criteria were identified for improvement, namely appropriate sample collection before starting antibiotics, timely antibiotic reviews and documentation, plus microbiology discussions for restricted antibiotics. This project was aimed at improving the performance of the aforementioned areas and assessing the efficacy of education materials and sessions in supporting AMS practice.

Methods:

Local and regional usage data, together with performance data from the audit were summarised into presentations, with teaching sessions organised for clinical staff over several weeks. Education materials via two posters for prescribers, pharmacists, nurses and healthcare staff were designed and distributed trust-wide in relevant clinical areas, together with on-site teaching and barrier analysis. Weekly run chart data of compliance to the three AMS criteria was collected from two inpatient wards (General Medicine and General Surgery) before and during the project to assess baseline compliance and identify project outcomes.

Results:

After ten weeks, baseline AMS compliance achieved improvements of 5-10% for appropriate sample collection (baseline 58.7%), 20-25% for timely antibiotic reviews and documentation (baseline 73.3%), and 20-25% for microbiology discussions of restricted antibiotics (baseline 62.1%). Further data breakdown identified surgical specialities requiring further AMS support, allowing for better allocation of microbiology resources, including a weekly ward round.

Conclusion:

Clinical awareness via a multidisciplinary approach remains key to improving AMS compliance, which can be improved and sustained effectively through regular staff education, either via teaching sessions or targeted education materials within the relevant clinical areas.

108: Outcomes of Patients with E. Coli Bacteraemia at Addenbrooke's Hospital: Assessing the Impact of Changing the Empirical Antimicrobial Urosepsis Guidelines

Mr Haifeng Jimmy Xu[1], Dr Rachel Bousfield[1,2,3], Dr Katherine Sharrocks[1,2], Dr Dominic Sparkes[2,3], Dr David Enoch[3], Dr Theodore Gouliouris[1,2,3]

[1]University Of Cambridge, Cambridge, United Kingdom, [2]Cambridge University Hospitals, Cambridge, United Kingdom, [3]Clinical Microbiology and Public Health Laboratory, Public Health England, Cambridge, United Kingdom

Introduction: E. coli is the commonest cause of bacteraemia and carries a significant burden of resistance. Guidelines for urosepsis were changed locally to gentamicin instead of co-amoxiclav with optional gentamicin in November 2019.

Aims: To assess i) the impact of the guideline change on prescribing and ii) the impact of gentamicin on outcomes in patients with E. coli bacteraemia.

Methods: A retrospective evaluation was conducted on 194 patients hospitalised with E. coli bacteraemia between August 2019 and January 2020. Statistical analyses were conducted using Stata.

Results: Community-acquired (CA), community-onset-healthcare-associated (CO-HCA), and hospital-acquired (HA) infections constituted 32%, 39% and 29% of total, respectively. Urinary sources (58%) accounted for most bacteraemias, ranging from 39% of HA to 76% of CA infections. 30-day crude mortality was 8.3% and the rate of acute kidney injury at 10 days was 5%. Resistance rates to co-amoxiclav and gentamicin were significantly higher in HA compared to CA bacteraemias.

The guideline change did not impact on gentamicin and co-amoxiclav prescribing. Effective empirical antibiotics within 24h were more likely in those receiving gentamicin (89%) compared to those who did not (70%, p=0.002). On multivariable logistic regression, 30-day mortality was associated with higher Charlson comorbidity and Pitt bacteraemia scores, and with non-abdominal/non-urinary sources, but not with time to effective antibiotic therapy or gentamicin use.

Conclusions: Despite changes in antimicrobial guidelines for urosepsis, there was no change in prescribing habits. Whilst empirical gentamicin improved time to effective antibiotics, no independent effect in survival could be detected in this cohort.

109: A case of infection caused by the rarely reported Fusobacterium gonidiaformans and its embolic spread from an intravenous injection site in the groin.

Dr Polly Young, Dr O Rahama[1], Dr S Hasnie[1]
[1]*Bradford Royal Infirmary, Bradford, UK*

Fusobacteria are gram-negative, anaerobic Bacilli that can cause septicaemia and have a propensity to disseminate and spread widely. In contrast to the archetypal F. necrophorum, the causative agent of Lemierre's Syndrome, the similar species F. gonadiaforms is rarely reported. Thus, little is known about its presentation in infection.

In this case, a 44-year-old male presented with pleuritic chest pain, poor oxygen saturations and an oozing injection site. Initial examination and blood tests indicated pulmonary embolism and local infection at a recent injection site. There was additional concern that a an aneurysm may have formed at the injection site, complicating management. Computer tomography revealed extensive cavitating lesions throughout the lungs and a large deep vein thrombosis (DVT) around the injection site. An injection site aneurysm was ruled out.

Surprisingly, F. gonadiaforms was identified in blood cultures and, although intravenous (IV) antibiotics were recommended, the medical team were unable to achieve IV access. Further, a peripherally inserted central catheter (PICC) was deemed too high risk due to the patient's lifestyle. Instead, an oral antibiotic regimen combined with DVT treatment permitted patient discharge within 9 days.

This case displays: i) presentation of an unusual bacterial infection; ii) potential for misdiagnosis and incorrect treatment failing thorough investigation and iii) the need to adjust initial treatment plans to suit the individual patient.

110: Time will tell: A 10 year look at S. aureus bacteraemia at Nottingham University Hospitals Trust

Dr Rodric Francis[1], **Dr Francesca Heard[1]**, Dr Nik Mahida[1]
[1]*Nottingham University Hospitals Trust, Nottingham, United Kingdom*

Staphylococcus aureus bacteraemia (SAB) is a significant cause of morbidity and mortality. Studies have identified that a shorter Time to Positivity (TTP) is correlated with likelihood of infective endocarditis and is a prognostic indicator of morbidity and mortality. Our retrospective observational study characterises the epidemiology of SAB and TTP at Nottingham University Hospitals NHS trust, a large UK teaching hospital trust. A total of 2192 SAB were identified between the 1st January 2008 and 31st December 2019. The annual incidence of SAB at NUH has increased by 15%, primarily due to increased community onset bacteraemia, which made up 54% of SAB. We observed a consistent annual peak in SAB in the month of September. In SAB where infective endocarditis was diagnosed, the mean time to positivity was 8.7 hours (99% CI, 6.9-10.5), which was statistically shorter compared to mean time to positivity of non- infective endocarditis source which was 12.4 hours (99% CI, 11.9 - 13.0), mean difference 3.7 hours, p <0.001.

In conclusion, our study looking at a large patient cohort confirms findings from other centres with TTP of SAB associated with IE. A significantly shorter TTP was found in SAB associated with IE. A seasonality aspect to our local bacteraemia rates was observed which to our knowledge has not been published in other studies and requires further characterisation. These findings are highly applicable on a local and national level and should prompt validation and review of available risk stratification scoring systems for SAB.

111: A review of significant neutropenia in Outpatient Parenteral Antibiotic Therapy (OPAT) patients

Ms Cheryl Scott[1], Dr Peter Yew[2]

[1]*OPAT Pharmacy Department, South Eastern Health And Social Care Trust, Belfast, Northern Ireland,*
[2]*Microbiology Department, South Eastern Health and Social Care Trust, Belfast, Northern Ireland*

Introduction: Prolonged courses of IV antimicrobials (typically 6 weeks) are widely used in the Outpatient Parenteral Antibiotic Therapy (OPAT) setting for the treatment of deep-seated infections, including osteomyelitis. The OPAT Pharmacy Team monitor and review all patients prescribed IV antimicrobials under the care of Trust Consultants in the community setting. A number of cases of significant neutropenia, requiring changes to antibiotic treatment plans and supportive measures for patients have been reported in the OPAT patient group.

Methods: Review of significant neutropenia episodes in relation to the antimicrobial(s) prescribed. Identify antimicrobial(s) most associated with this adverse effect. Individual case reviews to quantify impact on the patient. Collaboration with Trust Consultant Microbiologists to review findings and influence future antimicrobial choices for OPAT patients.

Results and impact: Neutropenia is a common adverse drug reaction in OPAT patients. Ceftriaxone, teicoplanin and daptomycin have a similar rate of antibiotic-induced neutropenia. Majority of patients saw resolution of neutrophil count within one week after antibiotic cessation, without requiring further active intervention. Despite lack of clinical signs/symptoms in patients, careful consideration of best regimen and close monitoring were required. Neutropenia patient information leaflet (PIL) was developed to support safety-netting.

112: Lessons learned from a case of invasive Aspergillus terreus in a cardiac transplant recipient

Dr Sarah Whitehead[1], Dr Simon Hobson[2], Dr Jane Cannon[1], Mr Philip Curry[1], Mr Andrew Hart[2], Mr Nkem Umez-Eronini[2], Dr Andrew Seaton[4], Mr Karim Morcos[1], Dr Andy Borman[3], Dr Sarah Jamdar[2], Mrs Rebecca Houston[1], Dr Venkat Sivaprakasam[1]

[1]Golden Jubilee Hospital, Clydebank, UK, [2]Glasgow Royal Infirmary, Glasgow, UK, [3]PHE Mycology Reference Laboratory, Bristol, UK, [4]Queen Elizabeth University Hospital, Glasgow, UK

The Golden Jubilee hospital is a tertiary centre for national and regional heart and lung services performing around 20 cardiac transplants every year amongst a full range of other cardiothoracic procedures. We review a case of invasive fungal infection with Aspergillus terreus complicating the post-operative period of a cardiac transplant patient. We would like to share the challenges posed by deep sternal and mediastinal wound infection from this fungus and by the interesting presence of fungal bezoars in the renal tract. Treatment was further complicated by hyper metabolism of the various antifungals used requiring very wide multidisciplinary co-operation which will be discussed in detail. The patient continues to remain on an anti-fungal with uncertainty on the duration and suitable expert advice from the scientific group would be welcome.

113: The Importance of an extra van run

Dr Harriet Runcie[1], Dr Joseph Anderson[1], Dr Jenni Crane[1]
[1]*NHS Lothian, Edinburgh,*

Background

In Edinburgh blood cultures from the Western General Hospital (WGH) are transported to the laboratory at the Royal Infirmary of Edinburgh (RIE) 6x daily. To investigate any delays in optimising antibiotic management in response to a positive culture the time taken from patient blood sampling to the first communication from microbiology to the clinical teams of a positive result was compared at the two sites. During the Covid-19 outbreak, an additional van run was added at midnight. Samples before (2018) and after (2020) were compared.

Method

All positive cultures from acute wards at the WGH and RIE between March- May 2018 and March-August 2020 were included.

The time of collection, time to positivity and the time of first contact with microbiology to the clinical teams were recorded. Outcomes of this discussion were categorised.

Results

There were 633 samples. 176 samples without a time documented for first contact were excluded.

In 2018 the median time from collection to first contact was 38.6 hours at the WGH, 24.0 hours at the RIE (difference 14 hours, p-value <0.001). In 2020 it was 26.3 hours at the WGH, 24.3 hours at the RIE (p-value 0.283). The discussion between microbiology and the clinic teams resulted in similar antibiotic outcomes.

Conclusions:

In 2018 there was a delay in optimising patient antibiotic management following a positive blood culture at the WGH compared to the RIE. With the additional van run in 2020 there was no significant difference between the two sites.

114: Incidence of Pulmonary Embolism in Covid-19 Inpatients

Dr Neil McInnes[1], Dr Akash Kotecha[2], Dr Heather Black[2]
[1]NHS GGC, Glasgow, , [2]NHS Forth Valley , Larbert

Aim

To assess if patients admitted to medical wards in Forth Valley Royal Hospital with covid were at higher risk of pulmonary embolism when compared to non covid, general medical patients admitted to the same hospital.

Methods

All CTPAs positive for PE, or typical Covid findings, from January 2020 to February 2021 were reviewed and unique patient identifiers were recorded. This list was compared to a list of all medical patients admitted over the same period. Using this comparison, we were able to ascertain the incidence of PE in covid positive inpatients and compare this with the rate in non-covid inpatients.

Results

A total of 1448 CTPAs found 282 pulmonary embolisms. Of these, 252 were in medical inpatients.

In patients with a radiological or PCR diagnosis of covid there were 32 pulmonary embolism diagnoses from 1075 patients (2.97%); compared to 220 PEs in 14,584 non covid patients (1.5%). This was found to be a significant difference using Chi Square test (p .0002) with an odds ratio of 2.0 (95% CI 1.3752 to 2.9179, p .0003).

Conclusion

When compared with non-covid patients, covid patients are twice as likely to have a pulmonary embolism during their hospital stay. This is further supporting evidence that covid 19 has a prothrombotic element to its pathogenesis and will help guide clinicians in decisions related to anticoagulation and investigation of deteriorating patients.

115: Inclusivity in recruitment to Covid-19 therapeutics trials at London North West University Healthcare Trust

Dr Ann Sturdy[1], Dr Hala Belazi[1], Dr Jessica Barrett[1], Dr George Hulston[1], Dr Victoria Parris[1], Dr Padmasayee Papineni[1], Dr Ashley Whittington[1]

[1]*London North West University Healthcare NHS Trust, London, UK*

Background

The Covid-19 pandemic has increased public awareness of clinical research and highlighted the under-representation of ethnic minorities and women in research participation, including in COVID-19 trials. We assessed the demographics of participants recruited into Covid-19 therapeutics trials at our acute NHS Trust which serves an ethnically diverse population of 1 million people.

Methods

All participants enrolled in Covid-19 therapeutic trials at London North West University Healthcare Trust from 1st March 2020 - 31st March 2021 were included, with age, sex and ethnicity data collected. This was compared with total Covid-19 admissions over the same time period.

Results

420 participants were recruited, the majority (361) to RECOVERY (Randomised Evaluation of COVID-19 Therapy). Covid-19 admissions totalled 7447 patients. Mean age for trial participants was 59.9 years, slightly younger than total admissions (mean 63.8 years). 32% of trial participants were female, significantly lower than the 42% of total admissions (p=0.003). 55% of trial participants were from ethnic minority groups, 22% white and 23% no ethnicity recorded, which was not significantly different to total admissions (p=0.06).

Discussion

This data shows that there was no significant difference in recorded ethnicity between participants recruited to Covid-19 therapeutics trials compared to total Covid-19 admissions. Women were significantly under-represented. This highlights the importance of interrogating trial recruitment data and implementing ongoing strategies to ensure research participation is as inclusive as possible; including accurate demographic recording, availability of translation services and diverse public involvement in the development of research protocols and written materials.

116: Improving legionella testing and public health actions in North West London

Dr Sam Tweed[1], Sara Atkin[1], Ed Andrews[1], Dr Gunveer Plahe[1], Dr Bharat Patel[2]

[1]North West London Health Protection Team, Public Health England, , , [2]Public Health Laboratory, London, Public Health England

Background

Initial Legionella diagnosis and public health actions rely predominantly on urinary antigen detection, with confirmation required on both Binax© and Bartels© tests at reference laboratory. In North West (NW) London variations in testing processes, collection of corroborating respiratory samples and specimen receipt by reference laboratory were delaying definitive case definition and increasing burdens on the Health Protection Team (HPT).

Methods

In June 2021, a Microsoft Forms© survey was designed to gather details of laboratory processes and delivered electronically to Microbiologists and service leads for all laboratories serving acute hospital trusts in NW London. A quality improvement approach was adopted to reflect findings to HPT and laboratory staff with an iterative learning process used to enable collaborative system change.

Results

The survey indicated Legionella urinary antigen testing is centralised to four laboratories serving NW London, all using Binax© tests (with 1/4 screening using Quidel Sofia©). All laboratories inform clinical and HPTs upon a positive urinary antigen result with 2/4 laboratories repeating the test for initial confirmation. 3/4 laboratories automatically request respiratory specimens from clinical teams and send urine samples to the reference laboratory prior to communication with HPT. Online presentation and discussion with HPT and laboratory staff enabled learning, reflection and review of processes.

Conclusions

HPT staff reported improved understanding of Legionella testing with all laboratories in NW London now implementing automatic requesting of respiratory samples and delivery of samples to reference laboratory. The approach is being repeated across London HPTs to further streamline the Legionella public health response.

117: Pharmacy Technician-led Antimicrobial Stewardship Ward Round: Completing reviews at day three of intravenous antimicrobial treatment and advising an appropriate clinical action by promoting the change of intravenous to oral antimicrobial

Mrs Shazia Nazir[1]

[1]*Leeds Teaching Hospital, Leeds, United Kingdom*

Context:

Leeds Teaching Hospitals NHS Trust (LTHT) is one of the largest acute hospital trusts in the country; this contributes to the large proportion of intravenous antimicrobials prescribed. The Healthcare Associated Infection (HCAI) Annual Programme for this year highlights the importance of expanding antimicrobial stewardship within the pharmacy team. We saw an opportunity to develop by leading a virtual Pharmacy Technician-led antimicrobial stewardship ward round resulting in less patients remaining on broad-spectrum intravenous antimicrobials. After discussions with the Pharmacy Infection Team (PIT) it was evident more support was needed to reduce the use of inappropriate antimicrobials

Method:

Pharmacy Technicians to complete virtual reviews, target a variety of specialities, record and review consistency, improvements and the outcomes achieved. Complete an audit to determine if these reviews have resulted in fewer patients receiving intravenous antimicrobials and effective outcome.

Results:

We completed reviews for 40 patients, I had advised to change to oral treatment for 28 patients, outcome after 24 hours 20 patients switched resulting in hospital discharge, overall recommendations were followed in 72% of cases.

Conclusions:

The anticipated challenges are going to be ensuring consistency in completing these reviews amongst our existing workload. The impact of these changes will allow us to develop clinically and promote antimicrobial stewardship.Completed reviews demonstrate the impact in reducing the inappropriate use of antimicrobials. If more Pharmacy technicians all completed a small number of reviews weekly it would result in reduced bed days, medication costs and improves patient care by facilitating discharge and safeguarding antimicrobials.

119: A retrospective multi-center review of antimicrobial usage in patients diagnosed with aspiration pneumonia

Mr Blend Ashtey[1], Mr Oliver Troise[1], Mr Stephen Hughes[1]
[1]*Chelsea And Westminster Hospital NHS Foundation Trust, , United Kingdom*

Background:

Over-diagnosis of infective aspiration pneumonia is common in healthcare settings and represents a potential for misuse of antimicrobials.

Methods:

A retrospective analysis was undertaken of all hospitalised patients treated for aspiration pneumonia within a multicenter Acute NHS Trust (April-May 2021, London, UK). Data collected included: age, initial antibiotics prescribed, duration of therapy, relevant microbiology (sputum samples or blood cultures) and chest X-ray. Treatment response was analysed including body temperature after 24 hours of antimicrobials, use of oxygen support after 48 hours, any escalation of antimicrobial therapy and 30-day in-hospital mortality. The study was registered as service evaluation project.

Results:

94 patients treated aspiration pneumonia were included; median age 82 years (IQR 67-89). Co-amoxiclav monotherapy was the most frequently prescribed treatment (67/94); cephalosporins (8/94) and ciprofloxacin (4/94) were also commonly used. Duration (median) of treatment was 4.4 days (IQR 1 – 6.7);32/94 patients received <48hours. Radiological evidence of consolidation, O2 support at 48hours and fever at 24 hours was present in 32/94, 25/94 and 12/94 patients, respectively. A microbiological diagnosis to confirm infection was present in 12/94.

Consolidation (OR 2.36(95%CI 1.04-10.25);p=0.037) and O2 support at 48hours (OR 3.22(95%CI 1.02-10.25);p=0.044), but not fever at 24hours (OR 0.94(95% CI 0.18-4.80), were associated with treatment escalation. No association between O2 support/fever and total duration was evident. 30-day in-hospital mortality was 17 %(16/94).

Conclusion:

Aspiration pneumonia has high in-hospital mortality and often necessitates antibacterial treatment. The true incidence of bacterial pneumonia is unclear and many patients may benefit from early cessation of antibacterial treatment.

120: Antibiotics use in intra-abdominal surgical presentations: a clinical audit

Dr Nutchanun Poolworaluk[1], **Dr Ho Juen Ko[1]**, Dr Sagar Jobanputra[1], Ms Pegah Kamranpour[1], Mr Girish Girish[1], Dr Hala Kandil[1]

[1]Watford General Hospital, West Hertfordshire Hospitals NHS Trust

Introduction

International guidelines recommend a single broad-spectrum antibiotic with anaerobic cover for empirical treatment of intra-abdominal infections, such as piperacillin-tazobactam (Tazocin) or co-amoxiclav. At Watford General Hospital (WGH), these antimicrobials have often been co-prescribed with metronidazole on surgical wards. Inappropriate antibiotic prescription is associated with increased risk of Clostridium difficile infection and antimicrobial resistance.

Aim

To review and facilitate appropriate antibiotic use in surgical presentations.

Method

We reviewed patients admitted to the surgical wards from 29/01/2021 to 05/02/2021, noting the indication and type(s) of antibiotics prescribed, and whether they were trust or non-trust compliant. Results were presented in the local surgical governance meeting and surgical juniors teaching, and findings distributed on posters to highlight the trust's intra-abdominal microbial guidelines. Ward pharmacists were also encouraged to flag non-trust compliant antibiotic prescriptions to the respective surgical teams. A re-audit was performed from 14/07/2021 to 18/07/2021.

Results

46 patients on empirical antibiotics for intra-abdominal infection were identified in the first cycle. 54% of these were prescribed trust compliant antibiotics, whereas 46% were prescribed non-trust compliant antibiotics (i.e. piperacillin-tazobactam and metronidazole or co-amoxiclav and metronidazole). A re-audit involving 34 patients found that 76% were prescribed trust compliant antibiotics – of those 24% prescribed non-trust compliant antibiotics, this was advised by Microbiology. 0% had double anaerobic antibiotic cover.

Conclusion

Inappropriate antibiotic use on the surgical wards for intra-abdominal infections has been identified as an issue at Watford General Hospital. Education and advocacy has demonstrated to be useful interventions in improving this.

123: An evaluation of Clostridioides difficile infection and treatment outcomes using fidaxomicin at Cambridge University Hospitals

Mr Andrew Chan[1], Dr Ieuan Walker[2], Dr Tumas Beinortas[2], Mr Aris Saoulidis[2], Dr David Enoch[2,3], Dr Theodore Gouliouris[1,2,3]

[1]University of Cambridge, Cambridge, United Kingdom, [2]Cambridge University Hospitals, Cambridge, United Kingdom, [3]Clinical Microbiology and Public Health Laboratory, Public Health England, Cambridge, United Kingdom

Background

Clostridioides difficile infection (CDI) is associated with significant mortality and recurrence rates. A previous study in Cambridge (April 2017-March 2018) found high rates of recurrence in patients treated with vancomycin or metronidazole. This led to the introduction of fidaxomicin as first-line therapy in November 2020. We assessed outcomes of CDI following this change in treatment guidelines.

Methods

We performed a retrospective analysis using a standardised proforma for data collection of patients who developed an index episode of CDI between November 2020 and April 2021 (period 2). Recurrence and all-cause mortality was assessed at 30-days and 12-weeks and compared to rates from 2017-18 (period 1). Recurrence was defined as recurrence of symptoms with C. difficile toxin positive stool or initiation of C. difficile treatment.

Results

49 episodes of CDI were identified in 41 patients. The median age was 73 years (range 25-96). These patients shared similar background characteristics to the previous patient group. Recurrence at 30 days and 12 weeks reduced from 14.7% to 2.4% (p=0.04) and from 22.5% to 9.8% (p=0.10), respectively. The median time to first recurrence increased from 27.5 to 51 days. 30-day and 12-week mortality were similar in both groups.

Conclusions

There is a trend towards reduced recurrence rate using fidaxomicin as first-line treatment although this effect reached significance only at 30-days, likely due to the fewer patients included in the 2020-21 cohort. Continued use of fidaxomicin for the treatment of CDI appears justified to prevent the healthcare pressures associated with recurrent infections in our setting.

124: Outcomes in patients with blood stream infections (BSI) during COVID-19 pandemic in tertiary care Intensive Unit

Miss Madalina-Ioana Pasca[1], Dr. Seema Desai[2]

[1]Keele University School of Medicine, Newcastle-under-Lyme, United Kingdom , [2]University Hospitals of North Midlands NHS Trust, Stoke-on-Trent, United Kingdom

Intensive Care Unit (ICU) associated BSI occur in 5-7% of patients, representing a negative prognostic factor in patients' care episode outcome. The COVID-19 pandemic has posed a significant challenge in the management of ICU associated BSI. The outcome of patients with BSI and COVID-19 coinfection is influenced by the interplay between the body's response to viral infections, comorbidities and the causative pathogen. Factors ranging from demographics to co-morbidities including diabetes and chronic respiratory diseases have been associated with poor outcome in COVID-19 patients.

We studied all-cause mortality in patients admitted to ICU during the COVID pandemic with BSI at day 14 and day 28 from admission. The patients were identified using the RSUH database between 24 March 2020 and 24 March 2021. We included 70 patients in our study with a documented COVID-19 PCR test and BSI. By admission day 14, 10% died, of which 57.14% had a positive COVID-19 PCR test and by day 28, 29% patients died with 70% of them testing COVID positive. Gram positive BSI were predominant as per the literature evidence, but mortality was higher in COVID test positive group (73.33% of patients that died with Gram positive cocci infection) which is very concerning.

We conclude a higher mortality in patients with a positive COVID-19 PCR test and with coexisting BSI. Our study highlights the negative impact of COVID-19 pandemic on the outcomes of critically ill patients in intensive care.

125: Impact of Medical Microbiology lead antimicrobial stewardship rounds on antimicrobial consumption in a level 3 hospital

Dr Mary Lucey[1], Ms Sabrina O'Regan[2], Dr Ruth Waldron[1,2]

[1]Department of Clinical Microbiology, Galway University Hospital, Galway, Ireland, [2]Department of Pharmacy, Portiuncula University Hospital, Ballinasloe, Ireland

Introduction

No onsite Consultant Medical Microbiologist (CMM) was available in this centre from September 2018 to November 2019. During this time antimicrobial stewardship (AMS) rounds were carried out by the antimicrobial pharmacist (AMP) with feedback provided directly to clinical teams. Antimicrobial consumption rose from 88.81 Defined Daily Doses/Bed-Days Used (DDD/BDU) in 2017 to 95.57 DDD/BDU in 2019. The aim of this study was to assess the impact of AMS service led by a CMM.

Methods

A structured antimicrobial stewardship programme has been in place since 2013. The re-addition of an onsite CMM in November 2019 facilitated new AMS initiatives, including ward based, targeted antimicrobial rounds, team audits and education sessions led by the CMM. These rounds focused on the choice of antimicrobial agent and duration of therapy.

Results

Overall antimicrobial consumption decreased from 95.57 DDD/BDU in 2019 to 82.16 DDD/BDU (14% reduction) in 2020. The addition of team based AMS rounds with a CMM and AMP alongside the clinical team enhanced the existing AMS programme and appeared to have the most benefit in reducing antimicrobial consumption. Increases in consumption were noted during weeks where there was poor attendance or cancellation of the AMS rounds.

Conclusions

AMS is most effective with specialty leadership and a multi-disciplinary approach. Continuous intervention is required in order to sustain improvements. AMS programmes have been shown to reduce the incidence of healthcare-associated infection and have a positive impact on antimicrobial resistance. AMS should be prioritised by healthcare institutions for increased investment.

128: The value of high Ct SARS-CoV-2 PCR results in infection control

Dr Shaza Abdalrahaman[1], Dr Grace Chan[1], Louise O'Sullivan[1], Edel O'Regan[1], Dr Niamh Reidy[1], Dr Conor Mulrooney[1], Dr Breda Lynch[1], Dr Margaret Hannan[1], Dr Maureen Lynch[1], Dr Deirdre Brady[1]
[1]*Mater Misericordiae University Hospital, Dublin , Ireland*

Background:

High Ct (cycle threshold) values are indicative of low viral loads and may inform infection control practices.

Methods:

We retrospectively reviewed all SARS-CoV-2 RNA results with high Ct values over 4 weeks in February 2021. RT-PCR tests were performed by the Microbiology Laboratory, Mater Misericordiae University Hospital, which provided onsite 24/7 testing during the third wave of pandemic. A Ct value of ≥ 35 was regarded as high Ct.

Results:

A total of 274 patients had SARS-CoV-2 RNA detected from nasopharyngeal swabs whilst 73 (26.6%) patients had high Ct of ≥ 35 with a median Ct of 38.5 (range 35.0-44.3). Of these 73 patients with high Ct, 42 (57.5%) patients were asymptomatic, 26 (35.6%) were symptomatic and 5 (6.8%) were unknown. 22 of 42 (52.4%) asymptomatic patients had previous COVID-19 infection in the preceding 6 months. 10 of 42 (23.8%) asymptomatic patients had repeat PCR tests performed in 48 hours where eight repeats were negative and two results had high Ct of ≥ 35. 32 asymptomatic patients without a repeat 48-hour PCR test were either outpatients (n=19), non-infectious inpatients with previous COVID-19 in the preceding 6 months (n=9), or inpatients without previous diagnosis of COVID-19 who remained under droplet precautions (n=4). In addition, 4 of 26 symptomatic patients with high Ct, had negative repeat 48-hour PCR tests which did not confirm the presence of SARS-CoV-2 RNA.

Conclusion:

SARS-CoV-2 PCR results with high Ct values, when interpreted in conjunction with relevant clinical parameters, are useful in identifying low risk patients.

130: Implementation of routine screening for hepatitis B (HBV) and hepatitis C (HCV) during COVID-19 pandemic at a London tertiary centre

Dr Alexandra Bramley[1], Dr Douglas MacDonald[2], Dr Lucy E Lamb[3,4], Dr Sanjay Bhagani[5,6], Dr Tabitha Mahungu[1], Dr Dianne Irish[1], Dr Tanzina Haque[1], Dr Jennifer Hart[1]

[1]Department of Virology, Royal Free London NHS Foundation Trust, [2]Institute of Liver and Digestive Health, UCL, [3]Royal Free London NHS Foundation Trust , [4]Academic Department of Military Medicine, [5]Department of Infectious Diseases/HIV Medicine Royal Free London NHS Trust, [6]Institute of Global Health, UCL

Aim: Routine HIV screening guidelines exist in the UK since 2016, however there are no national recommendations for hepatitis B (HBV) or hepatitis C (HCV). In our London tertiary centre, opt out HBV/HCV serological screening was added to a pre-existing haematology/biochemistry/HIV testing bundle utilised for all patients reviewed in our Emergency Department with suspected COVID-19. Patients identified with HBV/HCV were reviewed by Hepatology.

Method: Retrospective data collection of HBV surface antigen and HCV antibody screening was undertaken from 29th November 2020 until 19th April 2021. Demographic data, previous HBV/HCV status and follow up outcome were analysed.

Results: 36 patients (23 HBV, 13 HCV) were identified from 2960 patients screened using the testing bundle (0.78% and 0.44% respectively). Of the 23 patients identified with HBV, 15 (65.2%) were male, 8 (34.8%) female. 19 (82.6%) were aged >40. 18 (78.3%) were newly diagnosed. 2 previously known HBV positive patients (8.7%) were re-engaged in hepatology services. 2 HBV positive patients (8.7%) were commenced on HBV antiviral treatment while inpatients.

Of the 13 HCV RNA positive patients, 3 (23.1%) were male, 10 (76.9.%) female. 12 (92.4%) were aged >40. 7 (53.8%) were newly diagnosed. 6 (46.2%) have been commenced on HCV antiviral treatment, 2 (15.4%) as inpatients.

Conclusion: Prevalence of HBV/HCV in our screened population may be an under-estimate of community prevalence due to the selected cohort. Opt out BBV testing has been valuable in re-engaging existing patients, as well as enabling earlier specialist input and treatment, particularly in patients receiving COVID-19 treatment.

131: Yeast from The East: An East London, Trust-wide Candidaemia Audit Against Three Standards and Implications for Future Practice

Dr Berkin Hack[1], Dr Jon Lambourne[1]
[1]*Barts Health Nhs Trust, London, United Kingdom*

Background

Candidaemia is associated with significant morbidity, mortality and economic burden. A rise in cases in recent years reflects changing practices of modern medicine such as increased utilisation of intensive care facilities, insertion of lines and use of broad-spectrum antibiotics.

Aim

This audit had two key aims. Firstly, contribute data to two national audits (RCPath Candidaemia Audit, NHSI Antifungal Stewardship Audit) and a local audit. Secondly, provide a platform to review current practices in candidaemia, from investigations and management to antimicrobial stewardship.

Methods

This retrospective audit examined all cases of candidaemia in a large East London NHS trust between 2019-2020. Laboratory data and clinical records were reviewed for all cases. A multitude of datapoints were collected, feeding into the national and local audit outputs.

Results

In total, 94 episodes of candidaemia were reviewed in 57 patients across four sites in the one-year period. Candida was identified to species level in 96% of cases, with sensitivity testing performed on 67% of those speciated. Patients who went on to develop candidaemia received prophylaxis and treatment in 4% and 8% of cases respectively. Beta-D-glucan was measured in 8% of cases. 79% of cases were reviewed by the infection team within 24 hours of diagnosis.

Conclusions

This data provides rich analysis of an increasingly important infection. Findings allow modification of practices at a local level but can also be extrapolated to other settings. Speciation/susceptibility profiles informs antimicrobial policy while diagnostic data improves guidelines and reflections on stewardship develops an increasingly responsive microbiology service.

132: Audit of the use of Procalcitonin in patients with COVID-19 in critical care

Dr Imogen Fordham[1], **Dr Carolin Bresges[1]**, Dr Racheol Sierra[1], Dr Susie Jerwood[1]
[1]*University Hospitals Sussex NHS Trust*

Background

The COVID-19 pandemic has seen procalcitonin (PCT) increasingly used in UK hospitals, as a diagnostic and antimicrobial stewardship tool. After the introduction of PCT in our trust, we audited its use to assess the value of its ongoing availability in our Critical Care Units (CCUs) for patients with COVID-19.

Method

A retrospective case note review was completed for patients treated for COVID-19 in CCUs across two hospital sites between January and April 2021. Documentation from clinical notes and microbiology discussions were used to assess the role of PCT in decision-making. We also audited the use of the flow-chart designed to guide the application and interpretation of PCT.

Results

66 patients were included. The median age was 61 years (rage 20-77) and 68% were male. The median number of days in hospital before CCU admission was 2 (range 1-3) with a median length of CCU stay of 13.5 days (range 1-224). 41% of patients died during their CCU stay, 97% received steroid therapy, 15% tocilizumab and 74% antimicrobials.

For 68% of patients, PCT was thought a useful decision-aid. Of these patients, PCT informed a decision to hold antibiotics in 76%, and to stop antibiotics in 33%.

The PCT flow chart guide was consistently followed in 34% of patients.

Conclusions

PCT was deemed a valuable decision-aid in the management of COVID-19 patients in CCUs, although the methods of evaluating this were subjective. We found that our flow chart guideline was inconsistently applied, perhaps reflecting the complexities of managing these patients.

133: Audit and reaudit of penicillin allergy documentation in patients presenting through the emergency department at Royal Berkshire Hospital

Dr Aniruddh Shenoy[1], Ms Afsaneh Malakouti[2], Dr Shabnam Iyer[2]

[1]Tameside And Glossop Integrated Foundation Trust, Ashton-under-Lyne, UK, [2]Royal Berkshire NHS Foundation Trust, Reading, UK

Penicillin allergy is the most reported drug allergy in the UK, though it is estimated that under 10% are true allergies necessitating absolute avoidance of penicillin-based antibiotics. Evidence shows that the use of second-line antibiotics is associated with longer hospital stays and poorer health outcomes.

The aim of this audit was to evaluate whether history taking around penicillin allergy was complete enough to classify severity and guide management according to trust guidelines in patients presenting through the Royal Berkshire Hospital emergency department (ED).

Thirty consecutive patients admitted via ED that were prescribed antibiotics in the acute medical unit were selected for review. In those with a penicillin allergy status, electronic patient notes were evaluated for the documentation of the responsible drug, symptoms, date and management of the reaction. Findings were communicated to the ED team through departmental teaching. A reaudit was performed one month later in thirty consecutive patients with a recorded penicillin allergy presenting to ED were selected, reviewing the same parameters above.

The results showed that in those with a recorded penicillin allergy, 56% lacked enough documented history to reliably classify severity, with minor improvement from the first to second audit. Under 5% had a documented reaction to penicillin of a severity warranting absolute contraindication of penicillin-based antibiotics.

In order to change the culture and practice around challenging penicillin allergy labels, a robust multidisciplinary team approach will be required, as well as feedback into the policy making process to facilitate penicillin allergy history taking in the acute setting.

135: A layover at Lagos

Dr Mariya Molai[1]

[1]Hull University and Teaching Hospitals, Cottingham, United Kingdom

We present an imported case of severe Plasmodium falciparum malaria in a British lady returning after a layover at Lagos. In contrast to the majority of patients who recover with artemether lumefantrine this lady had recurrence of malaria demonstrating rare case of treatment failure. Physicians should be aware of this issue, and of the potential need for prolonged or alternative treatment in these rare cases. Moreover pre travel advice should be targeted not only those going for visiting family in their country of origin but also to be considered in those travelling not to an endemic area but having a layover in a high risk area.A 26-year-old lady working as a flight attendant was admitted with complicated falciparum malaria. She had a layover at Lagos for 24 hours where she stayed in a hotel.The blood smear on admission showed a parasitemia of 25%. She received intravenous artesunate for 5 days followed by oral artemether lumefantrine for 3 days. Repeated blood smear at time of discharge was negative for malaria. Subsequently in next 5 days presented with recurrence of symptoms and blood smear demonstrating falciparum trophozoites and 0.2 % parasitemia. She was then managed successfully with atovaquone-proguanil.

To conclude treatment failures are uncommon and represent a tiny proportion of notified P. falciparum cases in the UK. Aretmether -lumefantrine remains highly effective and recommended for treatment. The importance of message of prevention of malaria by avoiding mosquito bites and chemoprophylaxis should be brought to the attention of travelers going to endemic areas.

136: Infective endocarditis and a shift in aetiology - why?

Dr Sebastian Horne[1], **Dr Kathryn Essak**[2], Dr Gorana Kovacevic[3], Dr Peter Glennon[4]

[1]South Warwickshire NHS Foundation Trust, Warwick, United Kingdom, [2]University Hospitals Coventry & Warwickshire, Coventry, United Kingdom, [3]University Hospitals Coventry & Warwickshire, Coventry, United Kingdom, [4]University Hospitals Coventry & Warwickshire, Coventry, United Kingdom

Infective endocarditis (IE) carries a high morbidity and mortality, often involving complex patients and lengthy treatment. The European Society of Cardiology (ESC) recommends a collaborative approach to its diagnosis and management in its most recent guidelines.

University Hospital Coventry and Warwickshire (UHCW) has an established IE multidisciplinary team (MDT) since 2016 which has allowed us to compare recent IE data to previous analysis.

We performed a retrospective analysis on data collected on all patients with presumed and confirmed IE following MDT review between June 2018 and June 2021.

100 cases were included.

74 cases met the two Major Duke's criteria (definite IE).

Of all patients, 17 were intravenous drug users (IVDU) and 29 had an intracardiac device or prosthesis.

The majority of cases (85) were of left sided involvement with no significant valve preference.

The most common organisms grown were Streptococcus species (44 cases) whilst 13 cases were culture negative.

27 patients exhibited embolic phenomena including abscesses and arterial thrombi. 16 patients died in the period surrounding admission.

In this analysis, Streptococcus spp are the most common pathogens for IE as opposed to previous Staphylococcus spp predominance.

13% of cases were found to be culture negative which is in keeping with previous ESC statistics.

Within the same ESC statistics, 60-80% of cases were Staphylococcus spp – this differs from our findings at UHCW of streptococcal predominance (50% of all culture positive cases): is there a shifting pattern in IE pathogens?

137: An illustrated case of severe, haemorrhagic, vesico-bullous reaction to the COVID-19 (ChAdOx1-S) vaccine: conundrums in SARS-CoV-2 vaccination

Dr Eleanor Singer[1], Dr Catherine Wilson[1], Dr Angela Drummond[1], Dr S Erica Peters[1]
[1]*Queen Elizabeth University Hospital, Glasgow*

Background

The ChAdOx1 nCoV-19 vaccine (AZD1222) was demonstrated to be safe and efficacious(1). 1.71 million people received doses between 8/12/20 – 14/4/21(2). Rash reaction is an uncommon side-effect. This case describes a severe cutaneous reaction with clinical photographs in a 33 year old woman.

Case history

The patient (background of mild COPD, migraine) presented in March 2021 with myalgia, headache, nausea and diarrhoea immediately following her first dose of ChAdOx1 nCoV-19 vaccine (AZD1222). After four days, a rapidly-progressive rash developed. She was admitted on day 8, afebrile but tachycardic with an extensive haemorrhagic, vesico-bullous eruption without mucosal involvement. Organ support wasn't required. IV aciclovir and flucloxacillin were commenced empirically. Histo-pathology revealed “striking chromatin changes in keratinocytes” suggesting viral aetiology and features of bullous vasculitis. Microbiological testing was negative. Vesicle fluid was PCR-negative for adenovirus and COVID-19. HIV and auto-immune screens were negative. The rash progressed with significant oedema and pain. Following negative microbiological tests she received oral prednisolone, topical steroid and dressings, and the rash improved rapidly. Steroids were tapered and she was discharged. On last review (August 2021), she remained on low-dose oral and topical steroid. A “Yellow Card” was submitted.

(High-quality, illustrative clinical photographs will accompany the text.)

Learning points

This case demonstrates a rare but serious adverse reaction to ChAdOx1 nCoV-19 vaccine. It's not clear which component triggered this. There was no evidence of super-added adenovirus infection. She has been advised to avoid adenovirus-based SARS-CoV2 vaccine in future but, given her COPD, to receive an mRNA-based vaccine.

138: Validating dried blood spot cards to improve HCV diagnosis in Wales

Miss Anahat Kalra[1], Mrs Louise Davies[2], Mr Arran McKinty[2], Dr Brendan Healy[2]
[1]Cardiff University, Cardiff, Wales, [2]Public Health Wales, Cardiff

Background

Dried Blood Spot Testing (DBST) has made HCV testing more accessible. The process is simple and does not require skilled personnel or venepuncture training. Currently only one DBS (Dried Blood Spot) card has been validated for automated antibody testing. Validating other DBST cards will allow faster turnover time of results, better streamlining of services, increased resilience, and potential for reduced cost through competitive tendering.

Aims

To validate Whatman and additional DBST cards for automated antibody testing on the ARCHITECT immunoassay analyser.

Methods

Routinely collected serum samples were used to spot the different DBS cards. Tests for HCV antibodies were carried out using the automated immunoassay analyser system and the results compared with the already validated “perforated” card. Results within a half log difference were considered equivalent.

Results

20 patient samples were tested in total on the “perforated” and Whatman cards, and 10 on the Ahlstrom-Munksjo cards. Eight samples were reactive for HCV antibodies. The values on the Whatman cards were lower but within half a log difference.

The six positive cards that were tested on the Ahlstrom-Munksjo cards were also within half a log difference.

Conclusion

The Whatman and Ahlstrom-Munkjso cards detected all positive results when compared to the already validated “perforated” cards. Based on these results both cards could be used as replacements and processed using the automated system on the ARCHITECT immunoassay analyser. Prior to final adoption both cards should be validated further by processing more positive specimens.

139: Assessement of the Performance of VITEK MS Identification from Positive Blood Cultures after Six Hours Incubation

Dr Mairi Macleod[1], John Bingham[1], Mary Kilpatrick[1], David Jordan[1]
[1]*NHS Greater Glasgow And Clyde*

Introduction: Accurate and rapid reporting in positive blood cultures (+BCs) is essential for optimal management of the septic patient. Traditionally in Glasgow laboratories, +BCs receive a Gram stain and culture onto solid agar; any growth is fully identified the following day using Vitek MS in-line with manufacturer recommendation to use cultures incubated between 18-72hrs. This study assessed the performance of Vitek MS identification from +BCs after only 6hrs incubation.

Methods: +BCs were cultured onto blood agar, incubated for 6hrs and inspected for growth before testing on the Vitek MS. Results were not reported but compared to the result yielded from standard processes the following day.

Results: 324 +BCs were included in this study. 88.3% (286/324) of samples yielded the same ID at 6hrs and 18hrs incubation. 9% (29/324) had inadequate growth/ failed to provide a result at 6hrs. 4/324 were mixed cultures with one organism in each case correctly identified at 6hrs . 1.5% (5/324) resulted in an incorrect identification at 6hrs although in all but one case the identification was inconsistent with Gram stain findings.

Discussion: This study showed that identification at 6hrs was reliable when correlated with Gram stain. One potential error with minimal clinical impact was observed where S. hominis would have been misreported as S. epidermidis. This process has been introduced routinely into Glasgow laboratories with notable examples of usefulness being correct but unexpected identification of N. meningitidis, L. monocytogenes, S. maltophilia and F. necrophorum at 6hrs allowing significant improvement to antimicrobial management in these cases.

140: Virulence and antimicrobial profile of Staphylococcus aureus isolates from colonized Health care workers (HCW) in a tertiary care hospital

[1]*Vardhman Mahavir Medical College & Safdarjung Hospital, New Delhi, NEW DELHI, India*

Background: Staphylococcus aureus especially Methicillin Resistant Staphylococcus aureus (MRSA) it a significant pathogen in health-care settings. Infections with isolates with virulence genes, PVL and TSST-1, are associated with increased morbidity and mortality. Colonized healthcare workers (HCW) act as source of transmission of Staphylococcus aureus/MRSA in healthcare settings. Anterior nares provide an ecological niche for colonization of Staphylococcus aureus.

Aims & objetives: To detect nasal carriage of Staphylococcus aureus/MRSA among HCW (doctors and nurses) and study their virulence genes and antimicrobial resistance profile.

Material & methods: Nasal swabs were collected from doctors and nurses . Identification, antimicrobial susceptibility and molecular detection of mecA, PVL and TSST-1 gene among Staphylococcus aureus isolates was done.

Results and Discussion: Among 230 HCW screened, 53 (23%) were positive for Staphylococcus aureus and was higher compared to other studies. Prevalence was higher among doctors (35/130), than nurses (18/100). MRSA was detected in 22/230 (9.6%) HCW. PVL gene was detected among 7/22 (32%) MRSA and 8/31 (26%) MSSA isolates. TSST-1 gene was detected among 2/22 (0.9%) MRSA. All isolates were sensitive to vancomycin and linezolid. Resistance to fluoroquinolone and macrolides was 85% and 60% respectively. Mupirocin resistance was rare.

Conclusion: The high rate of nasal carriage of Staphylococcus aureus and its association with virulence genes can be a potential source of transmission among patients in absence of effective infection control programme . Mupirocin is effective for decolonization.

141: Antimicrobial Susceptibility Pattern of Small Intestinal Bacterial Overgrowth in patients with Irritable Bowel Syndrome

Dr. Nasreen Farhana[1], Dr. Nazmun Sharmin[2], Dr. Subrata Podder[3], Dr. Mohammad Jane Alam[3], Dr. Mahbuba Chowdhury[2], Dr. SM Shamsuzzaman[2]

[1]Department of Microbiology and Mycology, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka, Bangladesh, [2]Department of Microbiology, Dhaka Medical College, Dhaka, Bangladesh, [3]Department of Medicine, Sheikh Russel National Gastroliver Institute and Hospital, Dhaka, Bangladesh

Background:

Small intestinal bacterial overgrowth (SIBO) involves excessive growth of endogenous bacteria in the small intestine resembling those normally found in the colon and is more common in patients with Irritable Bowel Syndrome (IBS) with altered small bowel motility. Therefore the aim of this study was to assess the prevalence of SIBO along with their antimicrobial sensitivity pattern from duodenal aspirates in patients with nonconstipated IBS.

Methodology:

A total of 104 nonconstipated IBS patients underwent upper GI endoscopy were enrolled in this cross sectional study and was conducted in the Department of Microbiology, Dhaka Medical College, Dhaka, Bangladesh from September 2018 to August 2019. Aspirated duodenal fluids were inoculated quantitatively onto 5% sheep Blood agar and MacConkey's agar media and SIBO (>105 colonic bacteria/ml) was diagnosed using standard techniques. All isolated bacteria were subjected to antimicrobial sensitivity test according to standard guidelines.

Results:

Aerobic bacteria were isolated in 60 (57.7%) cases with colony counts ranged from 1.5x102 to 3.5x1011 (median 2.5x106). SIBO was found in 38 (36.5%) patients which is statistically significant ($p<0.001$). Pseudomonas spp. (86.84%) was found predominantly with amikacin, ciprofloxacin, meropenem and netilmicin as the most sensitive antimicrobials than cephalosporins.

Conclusion:

SIBO is more frequent among nonconstipated IBS patients and Pseudomonas was the commonest organisms found in culture. Amikacin, quinolones and carbapenems may be the preferred treatments which need to be proved further by a randomized controlled trial to help in better management approaches.

142: Occurrence of blaKPC, blaNDM and blaOXA-48 genes among carbapenemase producing Enterobacteriaceae in National Cancer Institute, Sri Lanka

Dr Sumudu Suranadee[1], Ms Renuka Jyalathacrachchi[1], Mr Sirithilak Gamage[1], Dr Samanmalee Gunasekara[2]

[1]Faculty of Medicine, University of Colombo, [2]National Cancer Institute, Sri Lanka, Colombo, Sri Lanka

Background: Carbapenem Resistant Enterobacteriaceae (CRE) pose a threat in current era with limiting the choice of treatment options and cross infections. CRE is global problem and occurrence of CR genes among CRE differ across geographical regions. Current Sri Lankan situation is unknown as there are limited local studies in this area. Hence, this study was aimed to identify three commonly occurring CR genes in the region.

Method: Enterobacteriaceae isolates resistant to meropenem and imipenem were collected from clinical samples submitted to the microbiology laboratory of National Cancer Institute. Conventional biochemical methods were used for species identification and CLSI disk diffusion method was used for ABST. In house conventional multiplex PCR was carried out to identify blaKPC, blaNDM and blaOXA-48 genes.

Results: A total of 123 isolates were tested. Forty (32.5%) were blood culture isolates. Klebsiella pneumoniae was the predominant carbapenemase producer (58.5%).

Sixty six (53.6%) isolates harbor blaOXA-48 and 47 (38.2%) had blaNDM. Only one isolate was positive for blaKPC. Thirteen (10.5%) had both blaOXA-48 and blaNDM and 9(7%) were tested negative for all three genes.

Conclusions: blaOXA-48 and blaNDM being common and blaKPC being very rare is expected with the geographical location of the country. Noted high prevalence of co-occurrence of CR genes among CRE isolates is alarming.

143: A Review of S. gordonii Bacteraemias in Greater Glasgow and Clyde, 2015-2020

Dr Mairi Macleod[1]

[1]NHS Greater Glasgow And Clyde

Introduction: The clinical microbiology team in our laboratory suspected that S. gordonii bacteraemia was more frequently associated with infective endocarditis than other viridans group streptococci.

Methods: A search of laboratory results was performed to identify blood cultures with S. gordonii over a six year period, 2015 to 2019. Laboratory system notes as well as information available on electronic patient notes were reviewed to gather information on cases including age, gender, number of blood culture sets positive, whether an echo was performed, likely source and outcome.

Results: 36 patient cases of S. gordonii were identified, 56% of patients were male, age range 45-95 years. Trans thoracic echo was performed in 22/36 cases. Infection was polymicrobial in 8 cases and most commonly grown alongside coagulase negative staphylococci. In 8 cases S. gordonii was isolated from more than one blood culture set. Infective endocarditis diagnosis was made in 30.6% (11/36) of cases. 7 of 11 cases affected the aortic valve and 3 of these had associated root abscess. 5 of the aortic valve endocarditis cases were associated with a prosthetic valve.

Conclusion: In our hospitals, S. gordonii bacteraemia had a significant association with endocarditis. Aortic valve was more commonly affected, often associated with a prosthetic valve as well as aortic root abscess.

144: Quality not quantity: A Quality Improvement Project designed to improve antimicrobial stewardship in COVID-19 patients through the use of Procalcitonin at a District General Hospital.

Dr Rohan Mehra[1], Dr Joshua Elliott[1], Dr Oluseye Ajoje[1], Dr Ibrahim Bhatti[1], Dr Reela Varghese[1]
[1]*Royal Surrey Foundation Trust*

Intro:

Antimicrobial resistance is one of 10 major public health challenges facing the world according to the WHO, often driven by incorrect or unnecessary antibiotic use. Many patients admitted to our hospital with COVID-19 were administered antibiotics without evidence of bacterial pneumonia. We therefore undertook a Quality Improvement Project to minimise the prescription of unnecessary antibiotics in COVID-19 patients, via guidelines based on serum procalcitonin (PCT) measurement.

Aims:

To decrease unnecessary antibiotic usage in COVID-19 patients.

To determine if there were any adverse outcomes related to decisions guided by PCT.

Methodology: We introduced a PCT-based guideline for ward-based patients alongside educational sessions to clinicians on use of antibiotics for COVID-19 patients (ITU COVID-19 patients had serial PCT measurements and were excluded from study). Patients were categorised into low probability of bacterial infection (PCT<0.25µg/L), where antibiotics were not advised, possible bacterial infection (PCT 0.25-0.5µg/L) and likely bacterial infection (PCT >0.5µg/L). We audited COVID-19 patient clinical records at two separate timepoints (total N = 61) coinciding with spikes in COVID-19 admissions: April-May 2020 and December 2020-January 2021.

Results: Of 61 patients, 38 were low risk, 11 were intermediate risk and 12 were high risk for superadded bacterial pneumonia based on serum PCT measurement. Antibiotics were stopped or prevented from being started in 34 patients, with no adverse outcome reported in this patient group. Per PCT assay, a mean of 2.6 days of unnecessary antibiotic use was prevented.

Conclusions: PCT measurement can be used to safely improve antibiotic stewardship among COVID-19 patients.

145: High Prevalence of Optr-A gene among Linezolid resistant Enterococcus faecium: First report from India.

Miss Vandana Rani[1], Mrs Rushika Saksena[1], Mrs. Dabet Rynga[1], Mr M. Amin-ul Mannan[2], Mrs Rajni Gaind[1]

[1]*Vmmc & Sadarjung Hospital, New Delhi,, India,* [2]*Lovely Professional University, Phagwara, Punjab, India*

Introduction & Background: Enterococcus faecium (EF) is the 3rd most common cause of nosocomial infections and Vancomycin resistance has now emerged. WHO has classified Vancomycin resistant EF as high priority pathogen. Linezolid (LZ), is a reserve antibiotic for vancomycin resistant isolates. LZ resistance is commonly mediated by mutation in 23S rRNA, plasmid mediated cfr and optr-A gene. Limited studies have investigated the association of optr-A gene with LZ resistance.

Material & methods: All clinically significant LREF isolates were enrolled in the study. Identification of EF was done by Vitek. Antimicrobial susceptibility and MIC of vancomycin and LZ were determined by disc diffusion and broth dilution respectively. PCR was performed to detect LZ resistance optr-A and cfr gene. Genetic relatedness in among LREF was done by PFGE.

Results: A total of 30 clinical isolates from patients with UTI and sepsis were LREF. The MIC of LZ were > 8µg/ml. All isolates were MDR and 93% were XDR. Majority of patient had co-morbid condition. All isolates were found negative for cfr gene. The prevalence of the optr-A gene was 80% (24/30). PFGE analysis demonstrated 3 major clones among LREF isolates

Conclusion: This is the 1st report of optr-A mediated LZ resistant in EF from India. All infections were nosocomial. This study suggests that optr-A is an important mechanism of LZ resistance. As optr-A gene is frequently associated with plasmids, implementations of infection control practices are important to prevent further spread in the hospital.

146: Hepatitis B Virus (HBV) prevalence and characteristics in HIV-transmitting mothers in KwaZulu-Natal, South Africa

Dr Jane Millar[1], Dr Gabriela Cromhout[2], Dr Noxolo Mchunu[2], Prof Philip Goulder[1,2], **Prof Philippa Matthews[1]**, Dr Anna McNaughton[3,5]

[1]Department of Paediatrics, University Of Oxford, Oxford, UK, [2]HIV Pathogenesis Programme, University of KwaZulu Natal, Durban, South Africa, [3]Nuffield Department of Medicine, University of Oxford, Oxford, UK, [4]Department of Infectious Diseases, Oxford University Hospitals, Oxford, UK, [5]Population Health Science, Bristol Medical School, University of Bristol, Bristol, UK

Background: The KwaZulu-Natal province in South Africa has a high prevalence of both HIV and HBV infection. HIV infection can modify HBV outcomes through potential associations with poorer prognosis, and an increased risk of HBV mother-to-child-transmission (MTCT). Working with an established cohort of HIV-transmitting mother-child pairs from KwaZulu-Natal, we set out to investigate prevalence and characteristics of maternal HBV infection.

Methods: Serum samples from 144 mothers were tested for HBV status using three biomarkers: current HBV infection (HBsAg), exposure to HBV infection (anti-HBc in the presence/absence of HBsAg), and HBV-immunity as a result of vaccination (anti-HBs in the absence of anti-HBc/HBsAg). HBV-infected mothers were further tested for HBeAg status and HBV DNA.

Results: 15/144 (10.4%) of mothers were HBsAg positive and 47/144 (32.6%) were anti-HBc positive. Among HBV-positive cases, 8/15 (53.3%) were anti-HBc negative. Vaccine-mediated immunity was present in 10/49 (20.4%). Among HBsAg positive cases, 7/15 (46.7%) had detectable HBV DNA, of whom 4/15 (26.7%) were HBeAg-positive. Median HBV viral load was 3.8log10 copies/ml (range 1.9->8.2log10 copies/ml). Determining highest risk of MTCT, 3/15 (20%) mothers had viral loads >5.3 log10 copies/ml.

Discussion: We found a high prevalence of HBV in a cohort of HIV-transmitting mothers, and evidence that 20% of them are high-risk for HBV MTCT. Anti-HBc was a poor biomarker for active HBV infection, and further investigation of its utility for determining exposure in HIV-positive individuals is needed. Our data highlight the importance of antenatal HBV screening, and birth dose HBV vaccination to prevent MTCT in vulnerable infants.

147: Impact of extensive Infection Prevention and Control training during COVID-19 pandemic on hand hygiene compliance: experience from a tertiary care hospital in India.

Dr Rushika Saksena[1], Dr Rajni Gaind[1], Dr Anupam Anveshi[1], Mrs Sunita Nagpal[1], Mrs Premrose Suri[1]
[1]*Vardhman Mahavir Medical College and Safdarjung Hospital, Delhi, India*

Background: Since the start of COVID-19 pandemic, hand hygiene has been a cornerstone of infection prevention and control (IPC) to ensure patient and healthcare worker safety.

Methods: The study was conducted in two non-COVID (one Adult mixed medical and surgical and one paediatric) ICUs of a tertiary care hospital in Delhi, India. Extensive IPC training was provided to all categories of healthcare workers (HCWs) in the April and May, 2020 in view of COVID-19 pandemic. 'WHO Hand hygiene observation form' was used to assess the compliance by direct observation method. 'Hand hygiene compliance was compared in pre-intervention (January to March, 2020) and post-intervention (June to September, 2020) period to evaluate the impact of training and pandemic on HCWs behaviour.

Results: Hand hygiene compliance in both Adult and Paediatric ICU improved significantly, 49.07% vs 70.33% and 44.69% vs 69.26% in the post-intervention period (p-value <0.00001). Increased compliance was observed across all categories of HCWs including nurses (47.84% vs 69.92%), doctors (47.62% vs 71.13% and ancillary workers (39.18% vs 66.3%). Though better compliance was observed in all '5 moments of hand hygiene', improvement was statistically significant (p value <0.00001) 'after touching patient' (49.9% vs 86.82%) and 'after touching patient's surroundings' (37.15% vs 71.1%).

Conclusion: Training of HCWs in COVID appropriate IPC practices had a ripple effect on hand hygiene compliance in non-COVID patient care areas as well. Higher compliance in 'After moments' reflects that improvement was likely driven by self-protection rather than patient protection.

148: Gut colonisation of Carbapenem Resistant Enterobacteriaceae among patients with haematological malignancies in National Cancer Institute, Sri Lanka.

Dr Sumudu Suranadee[1], Dr Yogeesha Dissanayake[2], Dr Thushari Dissanayake[3], Ms Renuka Jayalatharachchi[1], Mr Sirithilak Gamage[1], Dr Samanmalee Gunasekara[2]
[1]Faculty of Medicine, University of Colombo, , Sri Lanka, [2]National Cancer Institute, , Sri Lanka, [3]Faculty of Medical Sciences, University of Sri Jayawardenapura, , Sri Lanka

Background: Carbapenem Resistant Enterobacteriaceae (CRE) are the most critical group of multi drug resistant bacteria. Knowledge on the prevalence of CRE colonisation of the gut is essential in management and prevention. Current Sri Lankan situation is unknown as there are no local studies in this area. This study aimed to determine the prevalence of gut colonisation of CRE, evaluate their antibiotic sensitivity patterns and occurrence of carbapenemase genes.

Method: Rectal swab samples were collected from patients with haematological malignancies. A selective chromogenic agar was used to screen CRE and VITEK® 2 system was used in species identification and ABST. Multiplex conventional PCR was carried out to identify blaKPC, blaNDM and blaOXA-48 genes.

Results: A total of 119 isolates from 93 study subjects were tested. Prevalence of gut colonisation of CRE was 35.2% (93/264). Klebsiella pneumoniae was the predominant carbapenemase producer. 14.4% of study subjects were co-colonised with two or more CRE. Only three isolates were resistance to colistin and 66.2% (92/139) of isolates were sensitive to tigecyclin.

Sixty one (51.2%) isolates harbor blaNDM, 48 (40.3%) blaOXA-48 and 12 (10%) blaKPC. Three isolates (2.5%) were shown to harbor all three genes and 24 (20%) two genes. Twenty (16.8%) of isolates were tested negative for all three genes.

Conclusions: A relatively high prevalence of CRE colonization and co-colonization was detected in the study population. This indicates a potential challenge to infection prevention and control in the institute as colonisation with CRE carries a threat to endogenous infection and cross transfer.

149: A multimodal approach to infection control quality improvement in a Ugandan Neonatal Intensive Care Unit

Dr Lauren Hookham[1], Mr Amusa Wamawobe[2], Ms Abisagi Naluggwa[3], Ms Mai Kassaga[3], Dr Loy Nabirye[3], Professor Kirsty Le Doare[1,4]

[1]St George's University in collaboration with The Makerere University - Johns Hopkins University Research Collaboration (MU-JHU), Kampala, Uganda , [2]Clinical Microbiology Laboratory, CHS, Makerere University , Kampala, Uganda, [3]Kawempe National Referral Hospital, Department of Neoatology and Paediatrics , Kampala, Uganda , [4]MRC/UVRI@LSHTM Uganda Research Unit, Entebbe , Uganda

Background: Kawempe National Referral Hospital is a tertiary hospital based in Kampala, Uganda, with approximately 8000 neonatal intensive care (NICU) admissions per annum. Infants commonly share cots because of overcrowding. The NICU had no standardised cleaning practices and a limited range of microbiology investigations. Staff were concerned infants were acquiring nosocomial infections with organisms resistant to the antimicrobials available on the unit.

Methods: Focus groups with NICU staff members developed educational materials and cleaning tools. Environmental testing of 24 high-touch sites across the NICU was performed. Staff members requested sensitivity results be presented in a colour-coded format so that they could be easily understood by the hospital administration and NICU staff.

Results: 81 organisms were identified with 78% (n=63) classified as potential pathogens, such as Klebsiella spp, Acinetobacter spp, and Citrobacter spp. The colour coded sensitivity results were successfully utilised to support the fumigation of the unit. Stickers with the emotive message “If you don’t hand sanitise you are killing me” were designed by staff and placed across the ward. Staff also designed a generic cleaning schedule for each bay.

Discussion: Both infection control and quality improvement work can be challenging in a low-resource setting. However, by engaging staff with the emotive topic of nosocomial infection we were able to rapidly develop and introduce new infection control practices. Environmental testing results provided a basis to improve knowledge and engage staff. It is possible to implement infection-control activities in low-resource settings with low-cost interventions which can cumulatively make a big impact.

150: Burkholderia cepacia complex: Comparison between local laboratory practices and the 2015 Standardisation of Cystic Fibrosis Microbiology Testing in Scotland SMVN Guidelines.

Dr Andrew Nicolson[1], Dr William J Olver[1]
[1]*Medical Microbiology, Aberdeen Royal Infirmary, Aberdeen, Scotland*

Background:

Burkholderia cepacia complex is a group of 24 species of environmental gram negative organisms predominately pathogenic in Cystic Fibrosis (CF) patients. The group are inherently resistant to numerous antibiotics. All respiratory samples from CF patients should have a B.cepacia selective agar plate put up. Standardisation of CF microbiology testing was introduced in 2015 by the Scottish Microbiology and Virology Network (SMVN).

Aim:

Comparison of local CF microbiology practices for B.cepacia complex against the 2015 SMVN guidelines.

Methods:

Respiratory CF microbiology samples (2015-2021) that were culture-positive for B.cepacia were identified using the hospital's Infection Control software (ICNET, Baxter). First isolates were then assessed for identification methods, antibiotic susceptibility testing and whether they were forwarded to the national CF reference laboratory for confirmation of identification and genotyping.

Results:

6 B.cepacia isolates were identified, each from a different patient. All isolates were identified using MALDI-TOF and had susceptibilities checked against the appropriate antibiotic panel. 67% (4/6) were sent for confirmation to the reference laboratory with 3 identified as Burkholderia multivorans and one identified as Burkholderia cenocepacia. Three of these underwent genotyping. The two not sent away were reported by our laboratory as B.cepacia/B.cepacia complex.

Discussion:

While B.cepacia identification and susceptibility testing in our laboratory has complied with national guidance, a third of isolates were not sent to the reference laboratory for confirmation of identification (including speciation) and genotyping. This information is important to have for epidemiological and infection control purposes so further work is required to ensure adherence with the guidelines.

151: Lessons on PPE usage on Care of the Elderly wards during COVID-19, a quality improvement project

Dr Joanna Fish[1], Dr Thomas Hutchinson[1], Dr Marco Boodramsingh[2]

[1]*University Hospitals Sussex, brighton, united kingdom,* [2]*Isle of Wight NHS trust, Newport, united Kingdom*

Background: During the COVID-19 pandemic, hospital COVID-19 transmission was a concerning source of infection. PPE guidelines were issued to prevent transmission, and varied geographically and over time.

Aims: This QIP sought to assess training in, access to and use of PPE on Care of the Elderly (CoTE) wards at a tertiary hospital compared to best practices.

Methodology: survey of all doctors working on CoTE wards and focus group of CoTE ward nursing staff who worked December 2020 – April 2021.

Results: 27 responses from 40 doctors. All respondents were in contact with COVID19 patients, and all had worked across COVID19 negative and COVID19 positive wards during the same shift. 74% did not receive donning/doffing teaching prior to starting on a COVID19 positive ward and 78% were unable to don or doff appropriately when entering/exiting CoTE wards. 18% were fit tested for FFP3 masks, 85% did not wear FFP3 on CoTE wards.

Conclusion: Focus group staff felt unprotected, overwhelmed and abandoned by infection control measures. PPE access and training was limited. Infection control measures were difficult to implement.

Recommendations: improve PPE technique training and provide thought out PPE changing areas and supply; avoid cross-ward working through improved rota design.

152: A case of polymicrobial brain abscess with multi-organ involvement from a suspected odontogenic focus

Dr Tanmay Kanitkar[1], Dr Conor Bowman[1], Dr Gabriele Pollara[1,2], Dr Hector Maxwell-Scott[1], Dr Oshani Dissanayake[1], Dr Pedro Simoes[1], Dr Alex Salam[1], Dr Dominic Wakerley[1], Dr Cavan O'Connor[1], Dr Laura Maynard-Smith[1], Dr Nicolas Massie[1], Dr Amy Carroll[1], Dr Stephen Mepham[1], Dr Lucy Lamb[1,3]

[1]Department of Infection, Royal Free London NHS FoundationTrust, London, UK, [2]Division of Infection and Immunity, University College London, London, UK, [3]Academic Department of Defence Medicine, Royal Centre for Defence Medicine, Birmingham, UK

Introduction:

Polymicrobial intracranial infection with extensive multi-organ involvement from an odontogenic focus is rare. We present a case of polymicrobial brain abscess in a 75-year-old immunocompetent female, initially suspected of having a disseminated malignancy, following the finding of widespread mass-lesions in the brain, lungs, liver and endometrium.

Management:

Following a liver biopsy, Fusobacterium species were isolated on tissue culture, whilst histological examination demonstrated Grocott stain-positive branching rods. Initially, treatment included high-dose co-trimoxazole and metronidazole, to treat suspected Nocardia and Fusobacterium infection. A right frontal lobe brain aspirate culture isolated Actinomyces israelii and Campylobacter rectus, whilst the presence of Fretibacterium species was detected using 16S ribosomal-RNA polymerase chain reaction. Treatment was changed to high-dose meropenem following brain aspirate culture results and co-trimoxazole-induced thrombocytopenia. Following six weeks of meropenem, antibiotics were changed to oral amoxicillin to complete a minimum of three months of treatment for cerebral actinomycosis.

Outcome:

Following treatment, there was clinical, biochemical and radiological improvement. Though the patient showed no signs of odontogenic infection, no cause aside from her poor dentition could explain her mass lesions. All the isolated organisms are implicated in odontogenic infection and extensive investigations, including an immunodeficiency screen, were negative.

Learning points:

A unique feature of this case is the sheer extent of multi-organ involvement, thought to be secondary to repeated transient bacteraemias via a poorly maintained oral mucosa. It is important

to consider infection within the differential diagnoses of disseminated mass lesions, as well as arranging timely multi-site microbiological sampling to guide optimal anti-microbial therapy.

153: Study on the Clinical Spectrum and Antimicrobial Susceptibility Pattern of Streptococcus agalactiae from a Tertiary Care Centre in India

Dr Dabet Rynga[1], Dr Sanchi Kashyap[1], Dr Rajni Gaind[1]
[1]*Vmmc & Safdarjung Hospital, New Delhi, India*

Aim

The aim of this study is to observe the distribution of Streptococcus agalactiae or Group B Streptococcus (GBS) through the last 3 years and to study its antimicrobial susceptibility.

Material and methods

This is a retrospective study in which the data of all GBS isolated from various samples was collected using WHONET records for the period of January 2017 and June 2019. GBS was identified using conventional methods and antibiotic sensitivity pattern was determined by Kirby-Bauer disc diffusion method.

Results

A total of 93 isolates of GBS were isolated between January 2017 to June 2019. Of these, 38 (40.8%) were isolated from blood cultures, 32 (34.4%) were isolated from skin and soft tissue infection sites, 11 (11.82%) were isolated from urine, 7 (7.52%) were isolated from high vaginal swab, and 5 (5.3%) were isolated from other sites. Among the 38 isolates from blood, 36 were from new born which can be classified as Early Onset Disease while only a single case of Late Onset Disease.

The susceptibility pattern of the 93 isolates was observed as follows: 47% resistance to Erythromycin and 30% to Clindamycin. No resistance to Ampicillin, Vancomycin and Linezolid was observed.

Conclusion

Beta Lactams remain to be the drug of choice for the treatment of GBS infections as no resistance was observed. Streptococcus agalactiae are known to cause neonatal infections however it was observed that it can also cause other adult infectious syndromes.

154: Introduction of Surgical Site Surveillance Post Transrectal Ultrasound (TRUS) Guided Prostate Biopsy and the Impact on Infection Rates

Dr Cian Lenihan[1], Ms Margaret Bernard[1], Ms Catriona Murphy[1], Ms Sandra Lauhoff[1], Ms Margaret Power[1], Mr Dermot Lanigan[1], Mr Peter Ryan[1], Dr Olive Murphy[1], Dr Marianne Fraher[1]
[1]*Bon Secours Hospital, Cork, Ireland*

Background:

Infection post transrectal ultrasound (TRUS)-guided prostate biopsy is associated with infection rates between 0.3 % and 3.2%. Infectious complications include urinary tract infection, prostatitis, bacteraemia and sepsis. Surgical site surveillance in this patient cohort is becoming more important given global increases in antimicrobial resistance.

Methods:

Surgical site surveillance for patients undergoing TRUS biopsies was introduced in our hospital in 2017. All patients had a risk assessment form completed to assess for carriage or risk of carriage of multi-drug resistant organism. An intense analysis was completed on any patient who developed an infection post TRUS. Data was fed back on a quarterly basis to a multi-disciplinary working group. Members of this group include a Consultant Microbiologist, Infection Prevention and Control Nurse, Consultant Urologists, Antimicrobial Pharmacists and Clinical Nurse Ward Managers.

Results:

665 TRUS biopsy of the prostate procedures were performed between 2017 and 2020. The rate of infection post-TRUS was 2.7% in 2017, 3.4% in 2018, 3.2% in 2019 and 0% in 2020. This has been maintained in 2021, with no infections to date.

Conclusion:

A number of interventions were introduced resulting in a sustained reduction in infection rates in this cohort. These include changing the choice of surgical antibiotic prophylaxis, improvement in the timing of prophylaxis and scheduling of other urology procedures. The introduction of surgical site surveillance and multi-disciplinary input has demonstrated a reduction in infection rates post-TRUS infection.

155: Severe vaccine allergy- does it actually exist? Tales from the COVID-19 vaccine allergy clinic.

Dr Aisling Barry[1], **Dr Rebecca K Sutherland[1]**

[1]*Western General Hospital, NHS Lothian, Edinburgh, Scotland*

The Covid-19 vaccine roll out has been vital to control the effects of the pandemic. Early on in the vaccination programme it was proposed that those suffering from anaphylaxis of unclear source may be at risk from adverse reactions from certain vaccination products.

To ensure as many people had access to the vaccination programme as possible, NHS Lothian set up a monitored vaccine clinic for people who were felt to be too 'high risk' for community vaccination.

Demand for spaces in this clinic is high. We are a team of one consultant, with an interest in infection and allergy, and 2 nurse vaccinators. Clinic referrals are triaged by a consultant in dermatology/allergy- 191/>300 have met criteria for an appointment.

To date-146/147 people with either a severe reaction to their first covid-19 vaccine or a history of severe unexplained anaphylaxis/ angioedema have been successfully vaccinated. The use of concomitant medication including pre treatment antihistamine occurs in 12% of patients attending. 1 patient had adrenaline administered. 5 patients required prolonged stay in the hospital for further monitoring. Only one patient required over night stay. Critical care was consulted on 4 occasions- no HDU beds were required. None of the patients vaccinated had a change in blood pressure or heart rate to indicate anaphylaxis during the 30 minute observation time. The commonest reason for further monitoring was angioedema and/or disseminated rash.

This clinic supports the mass vaccination programme and is beginning to provide insight into the risk of severe allergy and Covid-19 vaccination.

156: A quality improvement project to identify common errors and improve prescribing and monitoring of intermittent intravenous vancomycin infusions at a large teaching hospital

Dr Hannah Tattersall[1], Dr James Daniels[2], Miss Caroline Evenden[3], Miss Flo Straughan[4], Dr Jamie Thompson[5], Dr Miruna David[6]

[1]University Hospitals Birmingham NHS Foundation Trust, Birmingham, United Kingdom, [2]University Hospitals Birmingham NHS Foundation Trust, Birmingham, United Kingdom, [3]College of Medical and Dental Sciences, University of Birmingham, Birmingham, United Kingdom, [4]College of Medical and Dental Sciences, University of Birmingham, Birmingham, United Kingdom, [5]University Hospitals Birmingham NHS Foundation Trust, Birmingham, United Kingdom, [6]University Hospitals Birmingham NHS Foundation Trust, Birmingham, United Kingdom

Background

Vancomycin is a commonly used intravenous (IV) antibiotic indicated in the treatment of gram-positive infections. Trust guidelines are available to ensure IV vancomycin is prescribed and monitored correctly. Poor adherence to such guidelines can result in subtherapeutic drug levels or high levels causing nephrotoxicity.

Aims/objectives

• To complete a quality improvement project to identify common errors and deliver multidisciplinary interventions to improve adherence to hospital vancomycin guidelines

Methods

All inpatients prescribed intermittent IV vancomycin infusions during the 4 week data collection periods were included (December 2020 and July 2021). Data was analysed and multi-disciplinary educational sessions were delivered to prescribers and administers of IV vancomycin. Following interventions, a further data collection period was undertaken and data analysed for improvement. Data was collected retrospectively from electronic patient records and included patient demographics, clinical diagnosis, vancomycin prescriptions and monitoring. Patients on dialysis and continuous IV infusions were excluded.

Results

Initial data demonstrated that loading dose errors occurred in 21/63 (33%) patients which improved to 16/60 (27%) following re-audit. Maintenance dose errors were made in 29/63 (46%) patients and improved to 22/60 (37%) patients following intervention. Significant errors were seen in the monitoring of vancomycin levels and there were frequent delays to administration whilst waiting for drug levels to be reported. Our analysis showed a 23% improvement in adhering to daily monitoring of renal function.

Conclusion

Improvement was seen following multidisciplinary educational interventions but adherence remains low. Using electronic prescribing systems to reduce human error may be useful in avoiding common errors.

157: Assessing effectiveness of a vancomycin continuous infusion protocol within the intensive care units (ICUs) at a London tertiary-care hospital: a single-centre retrospective service evaluation

Mr Robert Oakley[1], Mr Prijay Bakrania[2], Dr Moyo Olubokun[3], Mr Ting Yau[1], Dr Dagan Lonsdale[3], Professor Joseph Standing[4]

[1]St George's University Hospitals NHS Foundation Trust, , United Kingdom, [2]Guy's and St Thomas' NHS Foundation Trust, , United Kingdom, [3]St George's, University of London, , United Kingdom, [4]University College London, , United Kingdom

Background

Appropriate vancomycin dosing and therapeutic monitoring is important to optimise treatment. In St George's Hospital ICUs, non-renal replacement patients receive a loading dose (<65 kg, 1000 mg; ≥65 kg, 1500 mg), alongside a maintenance continuous infusion based on creatinine clearance (CrCl) and daily serum levels (target therapeutic range 20-25mg/L). As non-therapeutic levels can negatively affect clinical outcomes, a service evaluation was conducted.

Methods

Electronic prescribing data (vancomycin doses, serum levels, biochemistry, and demographics) within a 66-bed ICU service were reviewed retrospectively (July 2020–July 2021). Cockcroft-Gault CrCl was calculated using total body weight (TBW), or adjusted body weight in obese patients. Patients receiving appropriate vancomycin loading/maintenance doses were analysed.

Standards

1. Proportion of patients therapeutic and supra/sub-therapeutic within 48-hours

2. Time taken for non-therapeutic patients to become therapeutic

Results

Patients (n=54, 79.6% male, mean age 59.9±13.9 years) received continuous vancomycin infusions. Their TBW was 84.5±17.0 kg. Median CrCl was 59.1 (inter-quartile range 43.1-123.5) mL/min (n=47).

The protocol-recommended loading dose equated to 17.8±3.0 mg/kg TBW. Vancomycin levels within 24- and 48-hours were 19.5±9.9 mg/L (n=17) and 21.0±6.7 mg/L (n=15); 7/17 (41.2%) and 3/15 (20.0%) were in therapeutic range, respectively. By 48-hours, 46.7% (7/15) were sub-therapeutic and 33.3% (5/15) supra-therapeutic. Vancomycin levels for patients with CrCl>50mL/min and CrCl<50mL/min were 17.9±7.2 mg/L (8/15) and 24.5±4.2 mg/L (7/15). After dose adjustments, non-therapeutic patients became therapeutic in 3.9±1.0 days (n=7).

Discussion

Compliance to and dosing of the current vancomycin protocol requires review to ensure therapeutic levels are achieved more rapidly and consistently, whilst minimising toxicity.

158: Study of clinical spectrum and antibiogram pattern of Streptococcus pneumoniae from a tertiary care hospital of India.

Rajni Gaind[1]
[1]*Vmmc And Safdarjung Hospital, New Delhi, India, New Delhi, India*

Aim

To study the clinical spectrum of Streptococcus pneumoniae and the antibiogram of pneumococci isolated from different clinical specimens of patients from a tertiary care centre.

Material and methods

This is a laboratory based retrospective study on the clinical information and antimicrobial susceptibility of Streptococcus pneumoniae isolated from various samples between January 2017 and December 2020. Identification of Streptococcus pneumoniae was done by conventional methods and antibiotic sensitivity pattern was determined by using Kirby-Bauer disc diffusion method.

Results

A total of 250 Streptococcus pneumoniae were isolated from patients with various clinical samples. Of these, 170 (68%) were isolated from lower respiratory tract specimens (like sputum, BAL, empyema), 33 (13%) from blood cultures, 10 (4%) from cerebrospinal fluid, 26 (10.4%) from other sterile body fluids and 11 (4.4%) were isolated from other sites.

Eighty-two percent of the isolates were found to be sensitive to penicillin and 91% to chloramphenicol. None of the isolates were resistant to vancomycin and linezolid. Only 51% and 23% were sensitive to erythromycin and cotrimoxazole respectively. About 1.2 % of the isolates were found to be Multi drug resistant.

Conclusion

Majority of the Streptococcus pneumoniae isolates were susceptible to penicillin and thus it remains the drug of choice for management. However, penicillin resistance is emerging in Streptococcus pneumoniae. Hence, it is important to periodically monitor the antimicrobial resistance patterns to select empirical treatments for better management of pneumococcal infection.

159: Panton-Valentine leukocidin- Staphylococcus aureus characterization of infection and management: A Defence Medical Services (DMS) Audit 2016 – 2018.

Doctor Aaron Mason[1], Mr Gary Holden[2], Doctor Will Nevin[3], Doctor David Ross[1], Doctor Lucy Lamb[4] and 5

[1]Army Medical Services, Slim Road, UK, [2]HQ Surgeon General, Whittington Barracks, UK, [3]Liverpool School of Tropical Medicine, , UK, [4]Academic Department of Military Medicine, Royal Centre for Defence Medicine, Birmingham, UK, [5]Faculty of Medicine, Department of Infectious Diseases, Imperial College London, South kensington, London

Aim: UK Guidelines for the management of Panton-Valentine leukocidin- Staphylococcus aureus (PVL-SA) were published in 2008, with no recent update. PVL associated infections are common in military personnel leading to outbreaks, impacting on the training and health of soldiers.

Methods: An audit of PVL-SA infections acquired in service personnel (SP) was conducted retrospectively from Defence Primary Healthcare records between January 2016- December 2018 against the National Standard. Demographic data, Methicillin-Resistant Staphylococcus aureus (MRSA) status and combination of decolonisation therapy were analysed.

Results: DMS PVL-SA infections acquired during the period represented 3% of PVL infections processed by Public Health England. There were 490 separate infection episodes recorded from 260 SP, the majority were boils and abscesses. 246 (94.6%) cases were male with an average age of 30 (range 20-53). MRSA-PVL-SA infections were common in SP from Nepal 40/91 (44%) compared to UK nationals 24/233 (10.3%). Flucloxacillin was prescribed first line in 361 (73.7%) cases. Standard decolonisation therapy (chlorhexidine and mupirocin) was used following 302 (61.6%) episodes with a reoccurrence rate of 49.7% compared to no decolonisation, 85 (17.3%) episodes, had a higher reoccurrence rate of 74.1%.

Conclusion: Prevalence of PVL-SA infections are common in high-risk closed communities like SP, of particular concern is the rise in MRSA associated infections. These infections cause outbreaks, impacting the health and training of soldiers. Further research will prospectively assess the carriage and acquisition of PVL-SA infection in military recruits and the impact of decolonisation to prevent and reduce infection.

160: Electronic Prescribing of Vancomycin - is it any safer than paper?

Miss Zara Tariq[1], Miss Kate Paterson, Mrs Kelly Atack
[1]*Leeds Teaching Hospitals Nhs Trust, Leeds, England*

Background: Vancomycin was prescribed using a paper chart but a previous audit in 2020 showed a high error rate in prescribing loading doses, maintenance doses and checking levels at the correct time. It was moved across to the electronic prescribing system to decrease the error rate, with a protocol set up to standardise vancomycin prescriptions.

Electronic prescribing is used throughout our large teaching hospital and can improve the safety and accuracy of prescriptions.

Aims and Objectives: The audit aims to evaluate the accuracy in prescribing and monitoring of vancomycin using the new electronic protocol.

Methods: Adult patients across the Trust receiving intravenous vancomycin were identified using an online informatics reporting tool. In total, 27 electronic vancomycin prescriptions were examined over a 13-week period in 2021.

Results: The loading dose of vancomycin was prescribed similarly whether on paper or electronic prescribing (92% vs 93%). There was a significant improvement in the initial maintenance dose when vancomycin was prescribed electronically (36% correct prescriptions vs 92%). There were also improvements with vancomycin levels being taken at the appropriate time (70% vs 65%) and in appropriate dose changes made after these levels (88% vs 79%). The use of the protocol showed a decrease in loading dose and initial maintenance dose errors and an increase in correct serum level sampling and the second maintenance dose errors.

Conclusion and Recommendations: This audit demonstrates a reduction in prescribing errors in comparison to the previous audit and consequently that prescribing vancomycin electronically is more accurate than paper.

161: Spurious penicillin allergy labels (PALs): The challenges faced by the Pharmacy team in practice

Mrs Rashmeet Bhogal[2], Miss Bee Yean Ng[1], Miss Kornelija Kildonaviciute[1], Dr Louise Dunsmure[1]
[1]Oxford University Hospitals NHS Foundation Trust, Oxford, United Kingdom, [2]University Hospitals Birmingham NHS Foundation Trust, Birmingham, United Kingdom

Introduction

Spurious penicillin allergy labels (PALs) have an adverse impact on the human microbiome, antimicrobial stewardship, optimal patient outcomes and healthcare costs. PALs encourage second line antibiotic use and thereby encourage antimicrobial resistance. A drug allergy history is key to risk stratify the allergy label.

Pharmacists and pharmacy technicians are key stakeholders in identifying spurious PALs by taking a drug history. We explored the knowledge, behaviours and training needs that may impact this.

Method

A survey was created and disseminated to pharmacists and pharmacy technicians in two tertiary NHS organisations. 77 responses were received over a two-week period.

Results and Discussion

Our results demonstrated gaps in knowledge for the differences between an adverse drug reaction (ADR) and an allergic reaction. 29% respondents categorised headaches, nausea and vomiting, thrush, and diarrhoea as an allergic reaction.

After taking an allergy history, 78% occasionally or less frequently discussed spurious PALs with patients, citing workload, lack of confidence and anticipated patients' apprehension as the main barriers to de-labelling. 95% admitted to occasionally or less frequently removing spurious PALs.

Risk averse behaviour by clinicians was highlighted by 23% of pharmacists where second line antibiotics were continued despite confirmation of a spurious PAL.

Conclusion

The Pharmacy team is well placed to tackle spurious PALs in secondary care. Formal training on the differences between an ADR and a true allergic reaction is required. Validated protocols are needed to facilitate risk stratification and de-labelling of spurious PALs at a patient's bedside.

162: 'Start SMART': Have the Pharmacy team mastered the art of antibiotic allergy histories?

Miss Kornelija Kildonaviciute[1], Mrs Rashmeet Bhogal[2], **Miss Bee Yean Ng[1]**, Dr Louise Dunsmure[1]
[1]Oxford University Hospitals NHS Foundation Trust, Oxford, United Kingdom, [2]University Hospitals Birmingham NHS Foundation Trust, Birmingham, United Kingdom

Introduction

Antimicrobial stewardship (AMS) strategies in UK hospitals are based on the principles of 'start SMART, then FOCUS'. If there is evidence of a bacterial infection the 'start SMART' criteria recommend taking a detailed allergy history. False antibiotic allergy labels adversely impact AMS, sepsis treatment, antimicrobial resistance, and healthcare costs.

NICE and BSACI specify what constitutes a thorough allergy history. Pharmacy staff routinely take drug histories including an allergy history therefore we explored their compliance with NICE and BSACI criteria.

Methods

A survey was created and disseminated to pharmacists and pharmacy technicians in two tertiary NHS organisations. 77 responses were received over a two-week period.

Results and discussion

Our results demonstrate a knowledge gap of what constitutes a detailed allergy history. This was independent of the respondents' years of experience or role.

Most respondents asked the name of the antibiotic and the nature of the allergic reaction. However, only 46% of them frequently or very frequently asked the date and time of the reaction, 27% asked whether the reaction required hospital admission and 13% asked whether the reaction resolved upon stopping the antibiotic that caused the index reaction.

A complete and comprehensive drug allergy history was seen to be taken by 10% of the respondents.

Conclusion

The results of the survey demonstrated non-compliance with NICE and BSACI criteria for taking an accurate antibiotic allergy history. Formal training and a nationally standardised allergy history template is needed for routine clinical practice.

164: Review of blood culture sensitivity data in Paediatric Haematology

Dr Zoie Aiken[1,2], Dr Mansoor Shaikh[3], Dr Kirsty Dodgson[1,2], Professor Robert Wynn[3]

[1]Department of Microbiology, Manchester Foundation Trust, Manchester, United Kingdom, [2]PHE Public Health Laboratory Manchester, Manchester, United Kingdom, [3]Department of Paediatric Haematology & Bone Marrow Transplant, Royal Manchester Children's Hospital, Manchester Foundation Trust, Manchester, United Kingdom

We reviewed 4 years of data from our paediatric haematology population to determine whether the empiric antibiotics used for neutropenic sepsis remain appropriate. The first line treatment for neutropenic sepsis in our Trust is currently piperacillin-tazobactam and amikacin. Teicoplanin is used for additional Gram-positive cover, when required. All positive blood cultures collected between 4th Jan 2016 and 13th October 2020 were included. Samples growing the same organism from the same patient within a 14-day period were considered part of the same infectious episode and removed. 756 samples from 332 patients were included in the final analysis.

Gram-positive cocci were isolated most frequently from blood cultures (65.7%), followed by Gram-negative rods (26.5%), Gram-positive rods (4.4%), yeasts (2.0%), Gram-negative cocci (1.1%) and mycobacteria (0.4%).

Staphylococci were the most commonly isolated of the Gram-positive cocci (66.8%), mainly coagulase negative staphylococci (84% of staphylococci), which is typical in this patient population. Fourteen percent of Gram-positive cocci tested resistant to teicoplanin.

The majority (91.5%) of Gram-negative isolates tested sensitive to a combination of piperacillin-tazobactam and amikacin. A further 5.5% were lower virulence, environmental organisms with intrinsic resistance to this combination. Three percent of isolates (6/200) had acquired resistance to empiric treatment; 3/200 remained meropenem sensitive, 1/200 remained ciprofloxacin sensitive and just 2 isolates from one patient also tested meropenem resistant (VIM-positive Pseudomonas aeruginosa). Three isolates carrying the KPC enzyme were isolated and tested resistant to meropenem but remained sensitive to amikacin. We therefore conclude that the current empiric therapy is appropriate.

165: Effect of Bacterial Bioburden and Light Intensity on the Efficacy of Antimicrobial 405-nm Light

Miss Lucy Sinclair[1], Professor Scott MacGregor[1], Professor John Anderson[1], Doctor Michelle Maclean[1,2]

[1]The Robertson Trust Laboratory for Electronic Sterilisation Technologies (ROLEST), Department of Electronic & Electrical Engineering, University of Strathclyde, Glasgow, United Kingdom, [2]Department of Biomedical Engineering, University of Strathclyde, Glasgow, United Kingdom

Antimicrobial 405-nm light has gained interest for various infection control applications, including continuous decontamination of the clinical environment, where low bacterial populations (~10^2 CFU/cm²) are typically expected, and wound decontamination, where a microbial load of >10^5 CFU/g is considered the clinical threshold for diagnosing infection. This study investigates the bactericidal efficacy of high versus low irradiance 405-nm light on Staphylococcus aureus at various population densities to establish the impact of bacterial load and light intensity on inactivation efficacy. Liquid-suspended S. aureus (10^3-10^9 CFU/ml) were exposed to increasing doses of 405-nm light using irradiances of 5 and 150 mW/cm². Post-exposure, inactivation kinetics at each irradiance and bacterial density were established and susceptibility at equivalent light doses compared. Results demonstrate S. aureus susceptibility to a fixed dose of 405-nm light was significantly enhanced when exposed at low-irradiance for bacterial densities ≤10^7 CFU/ml: 2-4 times greater dose was required for complete inactivation using 150 mW/cm² compared to 5 mW/cm². This enhancement was not observed at a 10^9 CFU/ml density, with significantly greater inactivation achieved using 150 mW/cm² ($P<0.05$). This study demonstrates the enhanced germicidal efficiency of low-irradiance 405-nm light for the inactivation of bacteria at densities ≤10^7 CFU/ml, further supporting its use for clinical environment decontamination, and identifies that use of higher irradiance levels may be more efficient for applications where greater contamination levels are expected. These findings establish a basis for further investigation into associated photochemical mechanisms to better understand why bacterial density and light intensity are influential in 405-nm light inactivation.

167: Hepatitis B Virus Dataset from the National Institute for Health Research Health Informatics Collaborative (NIHR HIC): Describing the characteristics of infection and therapy to inform translational research

Dr Tingyan Wang[1,2], David A Smith[3], Cori Campbell[1,2], Oliver Freeman[1,4], Zuzana Moysova[1,3], Theresa Noble[1,3], Kinga A Várnai[1,3], Steve Harris[1,5], Hizni Salih[1], Gail Roadknight[1], Stephanie Little[1], Ben Glampson[6], Luca Mercuri[6], Dimitri Papadimitriou[6], Christopher R Jones[7], Vince Taylor[8], Afzal Chaudhry[8], Hang Phan[9], Florina Borca[9], Josune Olza[9], Frazer Warricker[10], Luis Romão[11], David Ramlakhan[11], Louise English[11], Eleni Nastouli[12], Salim I Khakoo[13], William Gelson[14], Graham S Cooke[6,15], Kerrie Woods[1,3], Jim Davies[1,5], Philippa C Matthews[2,3,16], Eleanor Barnes[2,3]

[1]NIHR Oxford Biomedical Research Centre, Oxford, United Kingdom, [2]Nuffield Department of Medicine, University of Oxford, Oxford, United Kingdom, [3]NIHR Health Informatics Collaborative, Oxford University Hospitals NHS Foundation Trust, Oxford, United Kingdom, [4]Nuffield Department of Population Health, University of Oxford, Oxford, United Kingdom, [5]Department of Computer Science, University of Oxford, Oxford, United Kingdom, [6]NIHR Health Informatics Collaborative, Imperial College Healthcare NHS Trust, London, United Kingdom, [7]Department of Infectious Disease, Imperial College London, London, United Kingdom, [8]Cambridge University Hospitals NHS Foundation Trust, Cambridge, United Kingdom, [9]NIHR Southampton Biomedical Research Centre, University Hospital Southampton NHS Foundation Trust, Southampton, United Kingdom, [10]University Hospital Southampton NHS Foundation Trust, Southampton, United Kingdom, [11]University College London Hospitals NHS Foundation Trust, London, United Kingdom, [12]Department of Clinical Virology, UCLH, London, United Kingdom, [13]School of Clinical and Experimental Sciences, Faculty of Medicine, University of Southampton, Southampton, United Kingdom, [14]Cambridge Liver Unit, Cambridge University Hospitals NHS Foundation Trust, Cambridge, United Kingdom, [15]Faculty of Medicine, Department of Infectious Disease, Imperial College London, London, United Kingdom, [16]Department of Infectious Diseases and Microbiology, Oxford University Hospitals NHS Foundation Trust, Oxford, United Kingdom

Background: Most UK data related to HBV have been reported from certain populations, e.g., HIV/HBV coinfected individuals, blood/organ donors, or primary care population. We aim to characterise HBV infection across multi-site secondary care in the UK, providing data to support international goals for viral hepatitis elimination.

Methods: We used a clinical informatics infrastructure, supported by NIHR Health Informatics Collaborative (HIC), to collect individual-level data from electronic patient record (EPR) systems in five NHS Trusts. Index date was defined as the first recorded positive HBsAg or HBV DNA.

Results: We identified 4259 adults with chronic HBV infection between 1994 - 2020. 54% were male, and the median age was 39 years (interquartile range [IQR]: 32-48) at the index date, with diverse ethnicities (31% Asian, 24% Black, 30% White, and 15% Other). The median follow-up duration was 4.8 years (IQR: 2.8-7.1), with ~7 deaths per 1,000 person-years. At the index date, 21% had high

viraemia levels (≥20,000 IU/ml), and 24% had elevated ALT (above the upper limit of normal), respectively. Antiviral therapy was prescribed in 12%, and those treated were more likely to be male, significantly older at index date, and more likely to be Asian than from other ethnic groups (all p-values <0.001).

Discussion: This novel dataset provides comprehensive longitudinal data on HBV infection from multi-site secondary care in the UK, offering important opportunities for HBV translational research. We have successfully integrated data from heterogenous EPR environments. Longitudinal data collection is continuing, and we are extending collaboration to more NHS Trusts.

168: Impact of the COVID-19 pandemic on routine surveillance for adults with chronic hepatitis B virus (HBV) infection in the UK

Cori Campbell[1,2], Dr Tingyan Wang[1,2], David A Smith[3], Oliver Freeman[1,4], Zuzana Moysova[1,3], Theresa Noble[1,3], Kinga A Várnai[1,3], Steve Harris[1,5], Hizni Salih[1], Gail Roadknight[1], Stephanie Little[1], Ben Glampson[6], Luca Mercuri[6], Dimitri Papadimitriou[6], Christopher R Jones[7], Vince Taylor[8], Afzal Chaudhry[8], Hang Phan[9], Florina Borca[9], Josune Olza[9], Frazer Warricker[10], Luis Romão[11], David Ramlakhan[11], Louise English[11], Eleni Nastouli[12], Salim I Khakoo[13], William Gelson[14], Graham S Cooke[6,15], Kerrie Woods[1,3], Jim Davies[1,5], Eleanor Barnes[2,3], Philippa C Matthews[2,3,16]

[1]NIHR Oxford Biomedical Research Centre, Oxford, United Kingdom, [2]Nuffield Department of Medicine, University of Oxford, Oxford, United Kingdom, [3]NIHR Health Informatics Collaborative, Oxford University Hospitals NHS Foundation Trust, Oxford, United Kingdom, [4]Nuffield Department of Population Health, University of Oxford, Oxford, United Kingdom, [5]Department of Computer Science, University of Oxford, Oxford, United Kingdom, [6]NIHR Health Informatics Collaborative, Imperial College Healthcare NHS Trust, London, United Kingdom, [7]Department of Infectious Disease, Imperial College London, London, United Kingdom, [8]Cambridge University Hospitals NHS Foundation Trust, Cambridge, United Kingdom, [9]NIHR Southampton Biomedical Research Centre, University Hospital Southampton NHS Foundation Trust, Southampton, United Kingdom, [10]University Hospital Southampton NHS Foundation Trust, Southampton, United Kingdom, [11]University College London Hospitals NHS Foundation Trust, London, United Kingdom, [12]Department of Clinical Virology, UCLH, London, United Kingdom, [13]School of Clinical and Experimental Sciences, Faculty of Medicine, University of Southampton, Southampton, United Kingdom, [14]Cambridge Liver Unit, Cambridge University Hospitals NHS Foundation Trust, Cambridge, United Kingdom, [15]Faculty of Medicine, Department of Infectious Disease, Imperial College London, London, United Kingdom, [16]Department of Infectious Diseases and Microbiology, Oxford University Hospitals NHS Foundation Trust, Oxford, United Kingdom

Background: The COVID-19 pandemic has led to routine service disruption for chronic diseases which require regular surveillance. To determine the impact on the population with chronic Hepatitis B virus (HBV) infection, we quantified the coverage and frequency of laboratory biomarkers used for routine surveillance, using data from the NIHR Health Informatics Collaborative (HIC) viral hepatitis database from five secondary care centres in the UK.

Methods: We used routinely-collected individual-level laboratory data collected across five NHS Trusts in England. We investigated how laboratory surveillance with ALT measurement (alanine transferase) varied between pre-COVID (years 2016-2019) to COVID (year 2020) in adults with chronic HBV infection (n=4865).

Results: Pre-COVID, 76.0% (95% CI 74.8-77.3%) of individuals had ALT measured on ≥1 occasion throughout the year, decreasing to 53.8% (95% CI 52.4-55.2%) in 2020. The number of ALT measurements decreased from 23 per 100 patients in January 2020 (95% CI 20-26) to 8 per 100 (95%

CI 6-10) in April during the first COVID wave, with a further decline to 4 per 100 patients (95% CI 3-5) in December 2020 during the second wave.

Discussion: We demonstrate the negative impact of the COVID-19 pandemic on routine clinical surveillance for adults with chronic HBV infection. Reduction in rates of surveillance closely track SARS-CoV-2 incidence and thus periods of population lock-down. Resources will be required to re-establish surveillance, and to catch-up on monitoring and interventions for those who have experienced delays in order to avoid preventable complications of HBV infection.

169: Utilising communication arts to improve awareness and knowledge of antimicrobial resistance in the lay public – A unique collaboration between infection specialists, academics, and art students

Dr Ryan Ashley Hamilton[1], Ben Archer[2]

[1]School of Pharmacy, De Montfort University, Leicester, United Kingdom, [2]Leicester Media School, De Montfort University, Leicester, United Kingdom

Background

Engaging the public on antimicrobial resistance (AMR) through effective communication methods is central to achieving ambition 9 of the UK's 20-year vision on AMR. This project aimed to develop new visual approaches to raise awareness of AMR and urinary tract infection (UTI) prevention in the general public, and identify any subsequent improvement in knowledge amongst the artists.

Methods

An antimicrobial pharmacist and graphic designer ran a project wherein 2nd year Communication Arts BA students developed visual and communication art products for the lay public, in response to a client brief focusing on AMR in the context of preventable UTIs. Students also participated in a pre- and post-project survey (n=17 and 14, respectively) to measure knowledge and attitudes.

Results

A range of products including videos, podcasts, computer-games, and posters were produced. After the project, fewer students believed antibiotics were needed for sore throats, but there was no change regarding using antibiotics for other viral infections or preventing infections generally. However, there was improved knowledge of UTI prevention. Before the project 100% had heard of AMR with 70% agreeing it was one of the biggest threats to human health. After the project, 100% agreed AMR was one of the biggest threats to human health, 85.7% felt they could apply their learning to everyday life, and 100% will share their learning with others.

Conclusion

Collaboration with art students can generate a range of products for use across healthcare while also improving students' knowledge of specific infections and increasing AMR awareness and advocacy.

170: Infection Prevention and Control During COVID-19: An Audit to Assess Compliance with and Accuracy of Local Triaging Checklist Tools for Bed Allocation

Dr Joshua Hrycaiczuk[1], Dr Bethany Hope[1], Dr Harry Quin[1], Dr Tariq Memon
[1]*University of Bristol and Weston NHS Foundation Trust*

Background:

Prior to the increasing availability of rapid diagnostic tests with a decreased turnaround time there was a high reliance on screening risk assessments and triaging of new admissions to manage patient flow and limit hospital spread of COVID-19. Locally it was noted patients who subsequently were diagnosed as COVID-19 positive were being mistriaged to medium risk bays rather than higher risk beds (the higher risk pathway would typical mean isolation of the patient until their PCR result was known). We retrospectively audited the accuracy of completion of triage assessment forms.

Methods:

We reviewed the cases of 46 patients admitted in October 2020 and evaluated the accuracy of their admission triage risk-assessments.

Results:

The results showed 3 patients (6.5%) did not to have risk assessment proformas filled in. 6 patients (13%) were triaged incorrectly as medium risk, despite meeting criteria for triage as high risk. This number included 4 patients who had radiological evidence of pneumonia, and 5 who had clinical signs of and a diagnosis of a respiratory tract infection; both of which should have prompted triage to a high-risk bed.

Discussion:

These results showed a notable degree of inaccuracy when triaging patients. For screening tools to prove useful accuracy is vital. Ultimately no screening tool will be 100% sensitive and no one strategy can be relied upon for preventing nosocomial spread. Robust screening protocols should therefore be in place and be used alongside rapid diagnostic tests, appropriate provision of side rooms, and additional infection control measures.

171: Two (samples): Cool for Stool?

Dr Craig George-Mcdowall[1], Dr Owen Seddon[1], Dr Michael Perry[1]
[1]*Cardiff and Vale Health Board, Cardiff, United Kingdom*

Introduction:

The move from culture to molecular methods in faecal enterics has improved sensitivity, theoretically reducing the value of repeated sampling. We sought to establish the diagnostic yield of repeated stool samples, and whether sampling criteria could be established to improve laboratory efficiency and reduce clinical workload.

Methods:

All samples with a molecular enteric panel performed in our centre over the preceding 3 years were analysed.

Results:

35% (6000/16914) of samples were repeats, sent within 30 days of a previous sample. Mean samples sent per patient was 4.1 with mean time of 7 days between samples. 21% of repeat samples were sent within 24hrs, and 37% within 7 days.

In 87% of cases, a diagnosis was achieved with the first sample.

The value of repeated sampling was pathogen dependent. A second sample was most useful for norovirus in generating a diagnosis (12/156 positive cases), and least useful for verotoxic e.coli (0/38 positive cases). Where the first sample was negative, the mean time to a positive sample was 11.5 days for any pathogen. Campylobacter and Salmonella were universally identified on a single sample on admission, and no new positives were identified later in a patient's admission.

Discussion:

Multiple samples may still have value even with the increased sensitivity of molecular testing. However, there was minimal additional benefit from greater than two samples. Testing for salmonella and campylobacter could reasonably be discontinued for all samples other than a single admission specimen.

172: A New Methodology to Identify Sepsis Cases for Audit

Dr Philip Wild[1], Dr Chris Hastie[1], Dr Gorana Kovacevic[1], Ms FIona Wells[1]
[1]*University Hospitals Coventry And Warwickshire, Coventry, United Kingdom*

Sepsis is a life-threatening condition. Early detection and intervention correlates strongly with likelihood of survival. Our trust has carried out monthly audits on sepsis management. Previously, sepsis cases have been identified retrospectively using clinical codes. This results in a six-week delay in audit findings and we can identify only a minority of total monthly cases. Here we demonstrate an alternative methodology.

In May 2021 we used an electronic register of patient's vital signs to screen 1009 patients who met the criteria for sepsis, being a National Early Warning Score (NEWS)2 score of 3 in one parameter, 5 or more cumulatively, or staff "concern". They were further screened for suspicion of, or confirmed infection using patient records.

We identified 276 patients who met both these criteria for sepsis, compared with 49 in April 2021 when our methodology relied on clinical codes. Of the 276 patients audited, 216 were screened for sepsis appropriately by clinical staff. This resulted in 166 being diagnosed as sepsis, of which 120 were appropriately treated within 1 hour.

This audit methodology has allowed us to increase the number of patients included in the audit and to draw them from a broader range of clinical areas. This allows more effective stratification between clinical areas, enabling targeted improvements. Also, there is a shorter delay to generate audit findings allowing rapid feedback to facilitate learning and development. Furthermore, nurses carrying out the audit report found that the time taken to review notes is reduced considerably.

173: Man's companion or enemy

Dr Mariya Molai[1]

[1]Hull University and Teaching Hospitals, Hull, United Kingdom

Capnocytophaga canimorsus is a fastidious gram negative pathogen than can cause serious multiorgan disease in humans. It's part of the normal gingival flora of dogs. We present the case of a gentleman who was admitted to the hospital with overwhelming systemic infection.There was no history of recent illness and past history was unremarkable. On admission he had raised temperature, was hypotensive, agitated, confused and skin on both legs appeared purpuric and mottled. Bloods showed raised inflammatory markers, acute kidney injury and disseminated intravascular. He was managed in ICU and his lack of consciousness and the finding of a purpuric rash prompted the initiation of Cefotaxime. An admission set of blood cultures flagged positive at 24hrs, indicating the presence of a fine, long Gram negative bacilli. The organism grew poorly on standard agar at 24hrs and the closest match using MALDI-TOF identified the organism as a Campylobacter species. The blood culture was re-cultured in microaerophilic conditions to improve the growth of the organism. Final identification was possible by direct MALDI-TOF identification using Sepsi-typer resulted as Capnocytophaga canimorsus. After careful questioning his wife revealed that the patient owned 4 dogs and a bite wound was seen on the dorsum of the right hand. This case is an important reminder to the microbiologists and clinicians that Capnocytophaga canimorsus can be an important cause of sepsis and its diagnosis and identification can be difficult and to ensure to identify animal exposure in the absence of classical risk factors in all septic patients.

174: Changes in the epidemiology of paediatric respiratory infection presenting to a UK teaching hospital between 2016-2021, reflecting the impact of the SARS-CoV-2 pandemic

Dr Sheila Lumley[1,2], Dr Nicholas Richens[2], Dr Emily Lees[2], Mr Jack Cregan[1], Prof David Eyre[1,2], Prof A. Sarah Walker[1], Prof Derrick Crook[1,2], Ms Sally Beer[2], Dr Alex Novak[2], Dr Nicole Stoesser[1,2], Prof Philippa Matthews[1,2]

[1]Nuffield Department of Medicine, University of Oxford, Oxford, UK, [2]Oxford University Hospitals NHS Foundation Trust, Oxford, United Kingdom

The SARS-CoV-2 pandemic has resulted in changes to the epidemiology of respiratory tract infections, driven by lockdowns and closure of educational settings. We describe the incidence of paediatric respiratory viral infection in Oxfordshire, UK.

Data on paediatric ED attendances (0-15years inclusive), demographics, respiratory virus testing and mortality at Oxford University Hospitals from the Infections in Oxfordshire Research Database were summarised using descriptive statistics. We compared disease severity (based on vital signs) between pathogens and pre-pandemic and pandemic periods.

Between 1-March-2016 and 30-July-2021, 155,056 ED attendances were recorded from 81,339 children. 7,195 respiratory virus tests were performed (1,179 Influenza A/B/RSV PCRs, 1,005 BioFire respiratory PCRs, 5,011 SARS-CoV-2 PCRs). Typical seasonality of common pathogens was greatly altered by the pandemic. Detection of all pathogens was suppressed during the first national lockdown. Rhinovirus and adenovirus rates/1,000 attendances increased when schools reopened September-December 2020, fell in January-February 2021, and rose again March-May 2021. The usual seasonal winter influenza and RSV peaks did not occur in 2020/21, with an atypical rise in RSV infections (32/1,000 attendances in 0-3yr olds) in July 2021. Influenza A/B remained supressed throughout. No difference in disease severity was seen between pathogens ($p=0.3$, Kruskal-Wallis) or between pre-pandemic and pandemic periods (all $p > 0.2$, Mann-Whitney).

Major changes in the incidence of paediatric respiratory viral infection occurred in Oxfordshire, with implications for clinical service demand, initiating palivizumab for infants at risk for severe RSV disease, and highlighting the need to understand which public health interventions are most effective for preventing respiratory virus infections.

175: Streamlining the transport pathway has significantly reduced the pre-analytical phase of blood cultures in two regional hospitals

Dr Peter Davies[1], Dr Mairi Macleod[1]
[1]*Glasgow Royal Infirmary, Glasgow, UK*

Introduction

Achieving the national 4-hour blood culture (BC) receipt target is vital for optimising patient care and effective antimicrobial stewardship; yet this is challenging in a centralised service. This retrospective observational audit aimed to streamline this pathway.

Methods

Junior doctors across two regional hospitals, the Royal Alexandra Hospital (RAH) and Inverclyde Royal Hospital (IRH), were invited to complete a BC survey. Following analysis, the transport pathway was adapted; transitioning from the use of porters to utilising the pneumatic tube system (PTS). This was publicised and signage altered accordingly on the PTS. The March–June 2019 BC timings were contrasted to the same period in 2021, following this transition.

Results

111 clinicians responded, most commonly foundation year 1 (26%, n=19) and 2 (27%, n=30) doctors. 84% (n=93) left BCs for porter transport without arranging pick-up and respondents estimated the maximum national recommended time for BC receipt to be 12hrs (median response). The median BC transit time decreased by 53.4% (15:30hrs to 07:13hrs) and the standard deviation by 38.2% (10:50hrs to 06:42hrs) following transition to the PTS. A greater decrease in transit time was observed at the IRH (63.6%, 18:11hrs to 06:37hrs).

Discussion

Respondent BC practice and knowledge suggests that samples were not viewed as urgent. Scheduled porter collection may be variable, affected by staffing/demand, in addition to a reduced weekend service. Switching to the PTS removes such variability, facilitating rapid transportation to the hub and the centralised off-site microbiology laboratory. This pathway has significantly reduced the pre-analytical phase within the Clyde hospitals.

176: Quality improvement initiative to improve CLABSI rates: an interim report from a critical care unit of a tertiary care center in a resource limited setting

Prof Rajni Gaind[1], Dr. Rushika Saksena[1], Infection Control Nursing Officer Prem Rose[1], Infection Control Nursing Officer Sunita Nagpal[1], Dr. Santvana Kohli[2], Prof P K Verma[2]

[1]Department of Microbiology, Vardhman Mahavir Medical College and Safdarjung Hospital, New Delhi, Delhi, India , [2]Department of Anaesthesia, Vardhman Mahavir Medical College and Safdarjung Hospital, New Delhi, Delhi, India

Background: The study was conducted in a 15-bedded mixed surgical-medical intensive care unit (ICU) by a multidisciplinary team of clinical microbiologists, intensivists, infection control nurses (ICN) and critical care nurses. The ICU averaged 22.5 Central line associated blood stream infections (CLABSI)/ 1000 central line days/month over a six-month period before quality improvement initiative.

Methods:

Root cause analysis (RCA) was performed using “fish-bone” and “driver diagrams” to assess the primary and secondary drivers of high CLABSI rates in September 2019. Data, root causes were discussed in monthly quality improvement (QI) meetings and Interventions were implemented.

Measurement of Improvement

Monitoring of “scrub the hub and Hand Hygiene compliance were measured. An exact binomial test was used to compare CLABSI rates and mid-P test for the devise utilization rate (DUR).

Results:

Interventions led to daily review of need of central lines and increased scrub the hub compliance. Staff noted a steep decline in the number of femoral lines. There was significant decrease in DUR ($p<.01$). Although the CLABSI rates improved ($p=0.17$) the difference was not significant. These finding reflect efficacy of QI initiatives. but additional data is needed to know if interventions to improve these indicators are effective

.Conclusions:

The availability of the ICN, resources and training of staff were keys to improvements.

Our ICU was the first critical care unit in the hospital to use QI tools. The success achieved has already had a ripple effect, with other units seeking to adopt similar interventions.

Acknowledgment : Daniel VanderEnde, CDC & Prevention, USA

177: Improving management of patients with neutropaenic sepsis: A quality improvement project in Swansea Bay University Health Board.

Dr Bryony Coupe[1], Dr Sarah Gwynne[2], Dr Gwenllian Edwards[3], Dr Brendan Healy[1]
[1]Swansea Bay University Health Board, Swansea, United Kingdom, [2]South West Wales Cancer Centre, Swansea, United Kingdom, [3]Velindre Cancer Centre, Cardiff, United Kingdom

177

Improving management of patients with neutropaenic sepsis: A quality improvement project in Swansea Bay University Health Board.

Infection is a major cause of morbidity and mortality in patients having systemic anti-cancer treatment. Although we still struggle to deliver an antimicrobial time to needle of 30 minutes, clinically well patients who are both febrile and neutropaenic could be managed with outpatient oral antimicrobial treatment. The Multinational Association for Supportive Care in Cancer (MASCC) risk index score is a validated tool for identifying patients with neutropaenic sepsis who have a low risk of complications and may not require inpatient intravenous broad-spectrum antimicrobials, saving resources, improving quality of life, and reducing nosocomial infections and antimicrobial resistance.

In our health board, audits of doctors working in general medicine showed complete ignorance of MASCC guidance, and virtually no use of the current clinical guidelines, described as “bulky” and “impossible to read through while on-call.” This ambitious QI project addressed these issues through multiple cycles, via collaboration with stakeholders in oncology, haematology, infectious disease and microbiology and working with a wide scope of healthcare professionals including antimicrobial pharmacists and acute oncology service (AOS) nurse specialists.

Outcome measures included improved involvement of AOS nurses at the point of care, guidelines use by medics, and understanding of the MASCC tool. Process measures and balancing measures were also assessed. Early QI cycles with small changes produced improved understanding and local management of neutropaenic sepsis among general medics and attained consensus among stakeholders for organisational-wide changes. Future cycles include modification of local antibiotic guidelines to ensure consistency and correct presentation of the MASCC tool.

178: Education for Sustainable Healthcare and Planetary Health: Exploration of the application of the Association for Medical Education in Europe (AMEE) Consensus statement to Infection Curriculums, Education and Training a mapping exercise with the UK's Combined Infection Training curriculum

Dr Sarah Walpole[1,2,3,4], Dr Anika Rahim[3,5], Dr Colin Brown[5,7], Dr Aula Abbara[3,6]

[1]Newcastle University, Newcastle upon Tyne, UK, [2]Association for Medical Education in Europe, , UK, [3]Health Professionals for Global Health, , UK, [4]Newcastle Hospitals NHS Foundation Trust, Newcastle University, Association for Medical Education in Europe, Health Professionals for Global Health, , UK, [5]Royal Free London NHS Foundation Trust, London, UK, [6]Imperial College Healthcare NHS Trust, London, UK, [7]Public Health England, UK

Climate change and biodiversity loss are major global threats affecting infectious diseases epidemiology. Changes in temperatures patterns, land use and extreme weather events are altering the geographical and seasonal distribution of disease vectors. Animal-to-human transmission (spillover) events occurring due to pressure on disease reservoirs are causing zoonotic disease outbreaks at huge global cost.

Healthcare delivery contributes to greenhouse gas emissions, natural resource use & waste generation. The UK's General Medical Council mandated that from 2020 medical students learn the principles and practice of sustainable healthcare. Earlier graduated health professionals frequently lack this competence.

Health professional educators and students from four continents have developed a consensus statement and framework for education for sustainable healthcare (ESH) to inform undergraduate and postgraduate education across health professions. We explored the relevance of ESH to infection training by mapping this ESH framework to the UK's Core Infection Training curriculum.

The following elements of the ESH framework are applicable to infection training:

•ESH learning objectives;

•Educational strategies; including recommendations to adapt existing teaching, self study and supervision to incorporate a planetary health perspective without adding a significant burden;

•Approaches to postgraduate assessment for ESH;

•Recommendations for faculty development & eco-ethical leadership;

•A proposed route map (including a timeline) for implementation of ESH, with indicators to measure implementation.

Infection professionals can be forefront in understanding threats to planetary and human health. This presentation describes feasible adaptations that could be made to infection specialty training to develop a workforce prepared to respond to urgent planetary health challenges.

179: Persistent SARS-CoV-2 detection and COVID-19 infection: A retrospective cohort study

Dr David Hettle[1], Ms Stephanie Hutchings[2], Dr Peter Muir[2], Dr Ed Moran[1]

[1]Department of Infection Sciences, North Bristol NHS Trust, Bristol, UK, [2]Public Health England South West Regional Laboratory, Southmead Hospital, Bristol, UK

Introduction

It is well recognised that whilst patients infected with SARS-CoV-2 are considered non-infectious after 10-14 days, viral RNA may remain detectable for a few weeks. The vast majority do not have an active infection. However, there are increasing reports of persistent infection with evidence of viral replication and ongoing symptoms for months. Such cases, mostly described in immunocompromised hosts, are challenging for individual patient care and generate epidemiological concern, of accelerated viral evolution and ongoing transmission.

Methods

We undertook a retrospective cohort study, investigating all patients with SARS-CoV-2 positive results >8 weeks apart from January 2020 to April 2021 in a tertiary centre in South-West England. Next-generation sequencing data was collected and correlated with clinical data for analysis.

Results

Sixty-one cases of persistent SARS-CoV-2 RNA detection were identified, with 39 included in analysis having excluded cases likely secondary to exogenous re-infection. 25.6% (10/39) of patients were in the last year of life.

Four cases of persistent COVID-19 infection were identified, in patients with haematological malignancy and hypogammaglobulinaemia, two of whom have since died. Viral replication and evolution was demonstrated in all cases. In those who survived to negativity, cycle threshold values gradually increased until clearance.

Conclusion

Immunocompromised patients, particularly those with haematological malignancy are at risk of persistent COVID-19 infection. Those towards the end of life may also be persistently viral RNA positive, though not infectious. Agreeing an approach to follow-up is essential, for public health and for patient care when novel therapies, such as specific monoclonals, become available.

180: Spondylodiscitis; what is the microbiological yield of different samples and how should this change practice

Dr Francesca Knapper[1], Dr Mustafa Elsayed[2], Dr Daniel Drodge[1], Mr Ram Sivakumaran[1], Dr Ed Moran[1]

[1]North Bristol NHS Trust, Bristol, United Kingdom , [2]Royal United Hospitals Bath, Bath, United Kingdom

Introduction

Spondylodiscitis is a rare but serious infection, associated with significant morbidity. It is important to confirm the microbiological diagnosis given the prolonged treatment required and proximity to the spinal canal.

This case series reviewed whether a causative organism was identified, and how samples were obtained. The aim was to develop a local pathway.

Methodology

All samples from patients with spondylodiscitis, discussed with the neurosurgical team in Bristol, over a 2 year period were reviewed. Data was collected on which samples were sent, and the diagnostic yield.

Results

58 patients were included. 57 patients had blood cultures sent, these were positive in 63% (36/57). Methicillin Sensitive Staph aureus (MSSA) was isolated in 55% (20/36). The next most common isolate was E.Coli 11% (4/36). Tissue cultures were sent in 20 patients with positive results in 65% (13/20). MSSA was isolated in 25% (5/20). 7 samples were sent for 16S PCR, 28% (2/7) confirmed staph species . Urine samples were sent from 86% (49/57). In 3/5 patients where E.Coli was grown this was confirmed in another sample (tissue or blood). No patients had a positive urine for MSSA.

Conclusion

Blood cultures have a significant yield in spondylodiscitis, reinforcing that these should be sent early. As in previous studies MSSA made up over half of the positive cultures. Urine culture has a limited role but should not be discounted. The tissue diagnosis was higher than previously reported. 16S PCR is a useful adjunct and should be considered in culture negative tissue samples.

181: The presence of nosocomial pathogens in the air of a hospital outpatient waiting room.

Mr Samuel Watkin[1], Miss Dionysia Anastasaki Sarri[1], Dr Elaine Cloutman-Green[2], Dr Lena Ciric[1]

[1]Healthy Infrastructure Research Group, Department of Civil, Environmental and Geomatic Engineering, University College London, London, United Kingdom, [2]Great Ormond Street Hospital for Children NHS Foundation Trust, London, United Kingdom

Background: The hospital environment is known to facilitate pathogen transmission, with evidence showing airborne dissemination of multiple pathogens. The majority of this understanding is developed from studies during outbreaks, or through investigations in high-dependency wards. Evidence for airborne pathogen presence in the environment in low-dependency settings is lacking compared to other clinical areas.

Methods: Direct microbial air samples were collected fortnightly at comparable times in a paediatric oncology day-care centre waiting room. Samples were cultured on Colombia blood agar, colony morphology documented and representative colonies of each morphology chosen for identification via Matrix-Assisted Laser Desorption/Ionisation Time-of-Flight analysis. Antimicrobial susceptibility profiles of healthcare associated pathogens were determined following EUCAST protocols.

Results: A total of 12 bacterial genera and 15 distinct species were identified. Staphylococcus was the most common genus identified (44.0%). Notably, Staphylococcus capitis accounted for 6.12% of identified species, Acinetobacter lwoffii made up 4.08%, with Staphylococcus aureus (1.02%) and Enterobacter cloacae (1.02%) also identified.

Conclusions: These findings demonstrate that both true pathogens, opportunistic pathogens and rare pathogens can be isolated from the air in an outpatient waiting room, suggesting this environment may pose a transmission risk to patients. The diversity of pathogens identified suggests that multiple sources may seed these organisms into the clinical environment. This further emphasizes the need for improved ventilation within healthcare spaces in order to reduce bacterial as well as viral transmission routes. Further data is needed to develop a risk assessment framework that will support and inform clinical risk assessments for outpatient and waiting areas.

182: Lack of travel history taking in acute medical settings; do undergraduate medical curricula cover travel history taking?

Dr Francesca Liuzzi[1,2], Miss Beth Wardle[2], Dr Timothy Rowland[3], Dr Dominic Pickles[3], Professor Nick Beeching[1,2,4], Dr Mike Beadsworth[1,2,4], Dr Sylvianne Defres[1,2,4]

[1]Tropical and Infectious Diseases Unit, Liverpool University Foundation Trust, Liverpool, UK, [2]University of Liverpool School of Medicine, Liverpool, UK, [3]Acute Medical Unit, Liverpool University Foundation Trust, Liverpool, UK, [4]Liverpool School of Tropical Medicine, Liverpool, UK

Background: Travel has increased exponentially over the last 70 years, and with this comes the increased risk of importing infections. In the last couple of years, there have been outbreaks of MERS-CoV, Ebola virus disease and yellow fever, plus the global CoVID-19 pandemic.

Even outwith the context of epidemics and pandemics, there is a regular influx of tropical related infections every year, with deaths in malaria every year due to delayed diagnosis.

As symptoms are common to many other non-travel related infections, a high index of suspicion is needed. Previous studies have shown that travel histories are poorly documented and often detail is lacking. One hypothesis for this was that medical students were not being taught to take travel histories appropriately.

Materials/methods: We performed a qualitative study of UK medical schools to establish how travel history taking is being taught. The undergraduate education leads at the schools meeting inclusion criteria were emailed a structured questionnaire.

Results: There were fifteen responses (43%); one medical school explicitly taught the taking of travel histories. Seven had elements of travel being mentioned in the assessment of the returning traveller; this was variable across the schools and the remaining seven did not teach the topic.

Conclusions: Taking a detailed travel history is not currently mapped to medical curricula in all UK medical schools, although travel and associated infection were themes running through existing curricula. As such, junior doctors are ill-equipped to elicit the relevant risk factors for and subsequently diagnose imported infections.

183: Antimicrobial Violet-blue light for Decontamination of Prebagged Blood Plasma: Evaluation of Antibacterial Action and Plasma Compatibility Studies.

Miss Caitlin Stewart[1], Dr Rachel Tomb[1], Dr Scott MacGregor[1], Dr Chintamani Atreya[3], Dr Michelle Maclean[1,2]

[1]The Robertson Trust Laboratory for Electronic Sterilisation Technologies, University of Strathclyde, Glasgow, Scotland , [2]Department of Biomedical Engineering, University of Strathclyde, Glasgow, Scotland , [3]Office of Blood Research and Review, Center for Biologics Evaluation and Research, Food and Drug Administration, Silver Spring, USA

Bacterial contamination remains the 2nd leading cause of death, after clerical errors, from blood transfusion. Pathogen reduction technologies can improve blood safety by proactively treating to remove infectious agents. Antibacterial violet-blue light, in the region of 405-nm, has recently demonstrated efficacy in reducing the bacterial burden in prebagged human plasma and platelet concentrates. This study expands knowledge on the antibacterial efficacy and plasma protein compatibility of 405-nm light for the bacterial reduction of prebagged human plasma.

Prebagged human plasma (300-mL volumes) was spiked with bacteria (Staphylococcus aureus and Escherichia coli at ~10^3CFUmL-1), and exposed, under agitation, to ~16mWcm-^{2} 405-nm light. Inactivation efficacy was assessed using doses up to ≤403Jcm-^{2}. Post-treatment testing on plasma was then conducted to assess protein integrity and plasma functionality, using SDS-PAGE and Prothrombin Time Tests, respectively.

Bacterial contamination in prebagged human plasma was significantly reduced (P≤0.05) after exposure to a dose of ≤173Jcm-^{2}, with bacterial loads reduced by >68%. S. aureus was more susceptible to inactivation with a 2.3-$\log_{10}$ reduction (>99.1%) achieved after a dose of 230Jcm-^{2}. Comparable inactivation of E. coli was achieved with 403 Jcm-^{2} where bacterial loads were reduced by 1.9-$\log_{10}$ (97.6%). Plasma compatibility studies indicated that an anitbacterial dose of 403Jcm-^{2} had mininal effect on protein integrity or functionality, with no signifiacnt differences in clotting times detected between exposed and non-exposed plasma (P<0.05). This study has demonstrated the antibacterial efficacy of 405-nm light for treatment of prebagged human plasma using treatment levels that indicate compatibility with the plasma itself.

184: Using a clinical audit of positive blood culture documentation to monitor the impact of Biomedical Scientists communicating blood culture results to clinicians, and to evaluate antimicrobial guideline compliance.

Ms Kate Pickering[1], Dr Robert Shorten[1,2]
[1]*Department of Microbiology, Lancashire Teaching Hospitals NHS Foundation Trust, Preston, UK,*
[2]*Centre for Clinical Microbiology, University College London, London, UK*

Introduction:

Following the introduction of a pilot programme of Biomedical Scientists communicating positive blood culture results to requesting clinicians, we performed our regular review of documentation accuracy. We additionally reviewed the compliance of antimicrobial therapy with trust guidelines, and the impact of Biomedical Scientists communicating results.

Method:

All positive blood cultures collected within a 30 day period were analysed retrospectively using laboratory information management systems. 99 blood cultures from 92 patients were reviewed. Biomedical Scientists followed specific guidelines for communicating results that were established prior to commencing the pilot programme. Appropriateness of antibiotic choice was determined using the local antimicrobial guidelines and the working diagnosis of the patient.

Results:

Electronic or verbal documentation was 100% on day 1 and 85.6% on day 2. On day 1, 17.2% were communicated by Biomedical Scientists and 62.5% of these required follow up by a duty microbiologist. Overall findings showed high levels of agreement with antimicrobial guidelines.

Conclusion:

Overall documentation compliance could not be suitably assessed due to a lack of Microbiology approved standards of best practice. The actions of this audit prompted development and implementation of these standards which in turn has improved consistency and allowed for easier future evaluation. Going forward the guidelines for documentation will be standardised into a competency and the frequency of Biomedical Scientists communication will increase. As Pathology services continue to modernise we aim to carry on evaluating the roles of different staff grades to highlight ways in which they can further use their knowledge and expertise.

185: Polymicrobial Infective Endocarditis: A Single centre Case Series experience using Daptomycin in renal impairment

Dr Juhi Patel[1], **Dr Natasha Weston[1]**, Dr Daniel Burns[1]
[1]*University Hospitals Birmingham Nhs Trust, Birmingham, England*

Infective endocarditis is associated with high morbidity and mortality. Polymicrobial endocarditis is rare, with management decisions often based on case reports or expert opinion. Management can be complicated by high infective burden, complications or co-morbidities. We present cases that demonstrate challenges associated with managing polymicrobial endocarditis in critically unwell patients. We discuss decisions around antimicrobial choice and share our experience using daptomycin in patients with severe renal impairment.

The patients discussed in this case series regularly injected drugs. They were admitted with severe septic shock and acute kidney injury requiring critical care admission. Patients presented with mixed staphylococcal and streptococcal recurrent bacteraemias alongside cardiac imaging demonstrating vegetations. They also developed infective complications, including septic emboli, from their endocarditis. Daptomycin was chosen when adverse events prevented first-line therapy from being used as it is active in a concentration-dependent manner, has a long half-life and demonstrates a prolonged post-antibiotic effect. Daptomycin was dosed according to the European Society of Cardiology Infective Endocarditis 2015 guidelines, and renally adjusted when required. Unfortunately, all cases were associated with poor clinical outcomes.

Choice of antibiotics in polymicrobial endocarditis with acute kidney injury is challenging, with an MDT approach involving pharmacists, and infection specialists key. Detailed post-hoc analysis of complex cases can guide future therapy decisions and has educational value. Evidence on dosing of daptomycin in renal impairment and treatment of polymicrobial endocarditis to optimise clinical success in these hard-to treat groups is welcomed.

187: Covid-19 associated invasive fungal disease in Intensive Care Units: an NHS Lothian perspective

Dr Jenna Schafers[1], Dr Jennifer Zhang[1], Dr Germander Soothill[1], Dr Iain Page[1]
[1]*NHS Lothian, Edinburgh, United Kingdom*

Introduction

Invasive fungal infection (IFI) is a well-documented complication of respiratory viral infection including Covid-19[1]. Mortality benefit following antifungal treatment of Covid-19-associated IFI has been demonstrated[2]. We aimed to investigate the incidence of IFI in Covid-19 patients admitted to ICU in Lothian and introduce an antifungal testing protocol.

Method

All patients with laboratory-confirmed SARS-CoV-2 admitted to Lothian ICUs from 26/03/20 to 17/02/21 were identified. Data was collected retrospectively from electronic records. An IFI testing protocol was developed and adherence analysed, including blood culture, serum β-D-glucan and galactomannan, mini-bronchoalveolar lavage (BAL) (culture and galactomannan), and CT chest imaging. Diagnostic criteria for IFI included radiological and mycological parameters.

Results

Data for 145 patients was analysed. 4 patients (2.8%) had per protocol fungal testing. 66 (45.5%) underwent CT imaging; 11 (32.3%) had findings potentially consistent with fungal infection. Fungal antigen testing uptake was poor; 12 (8.3%) and 15 (10.3%) for serum β-D-glucan and galactomannan respectively. Mean turnaround time for these tests was 6 and 13 days.

3 patients (2%) met criteria for IFI; 30 (20.7%) received antifungal treatment. Mortality was similar both pre and post-protocol (26% and 27%).

Discussion

IFI testing was incomplete in the majority of patients and our results likely under-represent the true incidence. The lack of mortality difference is therefore not interpretable. Some testing (CT/BAL) was not possible due to illness severity. Delay in fungal antigen results may have limited their real-time diagnostic value. In-house fungal marker assays may reduce this delay and improve investigation of patients with suspected IFI.

188: Feeling breathless with SARS-CoV-2: when should we worry about a pulmonary embolism? A single-centre retrospective review.

Dr Natasha Weston[1], Dr Devsaagar Thanki[1], Dr Griff Chatwin[1], Ms Krishma Patel[1], Dr Jennifer Short[1], Dr Matthew O'Shea[1], Dr Emma Hayton[1]

[1]*University Hospitals Birmingham Nhs Trust, Birmingham, England*

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is associated with a hypercoagulable state leading to an increased risk of pulmonary embolism (PE). Estimated risk of PE in these patients vary, with ongoing uncertainty in prevention, diagnosis and management of thrombotic events. We aimed to determine the incidence of PE in our hospitalised patients with SARS-CoV-2 and whether patient risk factors could be used to prioritise investigations.

We retrospectively reviewed all patients who had a positive SARS-CoV-2 PCR test and a CTPA admitted to a single centre hospital between April-November 2020 using electronic patient records. Patients routinely received weight-based dosing of prophylactic enoxaparin.

1445 patients had a positive SARS-CoV-2 PCR test and 227 CTPA scans were performed. 25% of patients were admitted to intensive care. In total 46 patients had a PE. The overall proportion of patients with PE with SARS-CoV-2 was 3.2%. 66% of patients were diagnosed with a PE on admission to hospital. Most patients presented following 2-3 weeks of symptoms, however, patients presented at any point from symptom onset. Patients with a PE had a higher D dimer ($P<0.01$) but this had a limited role in excluding PE. There was no clinically significant difference between patient groups with regards to: oxygen requirement, age, weight, ethnicity, frailty, previous VTE, renal function or prior surgery.

D dimers alone cannot be used to predict risk of PE; a high index of clinical suspicion is required. More data is needed to identify an optimal diagnostic pathway for identifying PE in these patients.

192: Development and application of loop mediated amplification (LAMP) assay for detection of Acinetobacter baumannii from positive blood cultures.

Mr Amit Sharma[1], Dr. Mudsser Azam[2], Dr. Ruchi Singh[2], Dr. Rajni Gaind[3]

[1]University School of Medicine and Paramedical Health Sciences, VMMC & SJH, GGS Indraprastha University, New Delhi, India, [2]ICMR-National institute of Pathology, Safdarjung Hospital Campus, New Delhi,, India, [3]Department of Microbiology, Vardhman Mahavir Medical College and Safdarjung Hospital, New Delhi, India

Background: Multidrug resistant-Acinetobacter baumannii(AB) is frequently associated with nosocomial infections including sepsis. Therapeutic options are limited and the risk of mortality increases by 7.6% with every 1-hour delay in optimal therapy in sepsis. The turnaround time (TAT), for diagnosis of sepsis by conventional methods, is 48-72 hours. In the current study, LAMP assay was developed and validated for detection of AB directly from blood and positive blood cultures.

Methods: To study the limit of detection (LOD) of LAMP assay, blood (10ml) from healthy volunteers was collected and spiked with various concentration of A. baumannii(108-101cfu/ml) and subjected to LAMP. Validation of LAMP assay was performed on positive blood cultures(n-36). Results of LOD and LAMP assay from blood cultures were compared with PCR and realAmp.

Results: Among 36 blood cultures, 10 were positive for AB, 10 were positive for AB along with other pathogen and 16 were positive for other pathogens excluding AB. The results of LAMP assay were comparable with conventional culture results, realAmp and PCR. The LOD from spiked blood was 106, 103 and 108cfu/ml for LAMP, realAmp and PCR respectively. TAT for detection of AB from blood cultures using LAMP and conventional method was 4-6 and 24-36 hours respectively.

Conclusion: This is the first report of application of LAMP assay for detection of AB from positive blood cultures. Early diagnosis (TAT ≤ 6hrs) of sepsis will help to optimize therapy and reduce mortality. Depending on the locally prevalent pathogens and resistance genes assay can be modified for optimal use.

193: GRIP – Gram-negative Bloodstream Infection Reduction in Percutaneous Transhepatic Biliary Drainage related cases

Dr James Cheaveau[1], Mr John Reicher[2], Dr Ralph Jackson[2], Ms Gillian Lishman[3], Mr Chris Cunningham[1], Dr Deepa Nayer[1]

[1]Department of Microbiology, Newcastle Hospitals NHS Foundation Trust, Freeman Hospital, Newcastle upon Tyne, United Kingdom, [2]Department of Radiology, Newcastle Hospitals NHS Foundation Trust, Freeman Hospital, Newcastle upon Tyne, United Kingdom, [3]Department of Infection Prevention and Control, Newcastle Hospitals NHS Foundation Trust, Freeman Hospital, Newcastle upon Tyne, United Kingdom

A retrospective review of hospital acquired E. coli bacteraemias occurring between Apr 2018 - Sep 2020 highlighted seventy-six E. coli bacteraemias with hepatobiliary sources of infections. Of these, 34/76 (44.7%) were procedure related with 14/34 (41.2%) patients undergoing Percutaneous Trans-hepatic Biliary Drainage (PTBD) procedures representing the biggest proportion of these. This was despite 13/14 (92.7%) on individuals receiving prophylactic antibiotics.

In 11/14 (78.6%) of cases, antimicrobial prophylaxis prescribing did not meet PTBD international guidelines. Dataset analysis identified issues with lack of standardisation in choice, timing and dosing of antibiotic prophylaxis. Further issues were identified with first line prophylaxis being given inappropriately despite recent antibiograms demonstrating resistance.

A quality improvement project utilising the institute for healthcare improvement (IHI) framework was implemented to affect a change. New hospital prophylaxis guidelines for PTBD were devised to standardise and improve antimicrobial prophylaxis, taking local resistance patterns into account. An automated system is being devised that to prompt a discussion with microbiology in the event of a recent bacteraemia. This will allow for personalised antimicrobial prophylaxis advice based on an individual patient's microbiological history.

We hope that the above changes will reduce hospital acquired gram negative blood steam infections in the hepatobiliary directorate. Collection of prospective data will allow us to monitor the impact of the changes. Applying quality improvement standards will lead to significant positive impact on patient outcomes.

194: Improving the management of Staphylococcus aureus bacteraemia in a busy London DGH - impact of increased infection bedside reviews and availability of elastomeric devices for OPAT

Dr Bushra Chaudhry[1], Dr Emma Mcguire[2], Dr Katherine Woods[3]

[1]Homerton University Hospital Nhs Foundation Trust, London, United Kingdom, [2]Homerton University Hospital NHS Foundation Trust, London, United Kingdom, [3]Homerton University Hospital NHS Foundation Trust, London, United Kingdom

Staphylococcus aureus bacteraemia (SAB) is a life-threatening infection, with an associated mortality of 20-40%. Although prescriptive national or international guidelines are lacking, it is standard practice that management of SAB includes: clearance blood cultures, echocardiography, and 2-4 weeks intravenous antibiotics. Bedside Infection specialist review has shown to improve outcomes. An initial audit of SAB management at Homerton University Hospital (1st August 2015 to 31st July 2018) identified opportunities for improvement in practice (McGuire et al, FIS 2019). Main actions implemented were: SAB section in the Trust Microguide; increased bedside reviews by Infection team; flucloxacillin 24hr infusions via OPAT.

The management of SAB patients presenting to HUH between 1st January 2020 to 28th February 2021 has been re-audited. Cases were identified from the microbiology laboratory database and data was retrospectively collected from electronic patient records.

Compliance with recommended practice improved in all areas for the 38/51 cases included in the re-audit:

1. 33/38(87%) (vs previous 80%) of patients underwent echocardiography,

2. clearance blood cultures were performed in 38/38(97%) (vs previous 63%)

2. the recommended duration of anti-Staphylococcal antibiotics were administered in 32/32(100%) (vs 56% previously)

4. 37/38(97%) (40% previously) had an Infection specialist bedside review.

5. 11/17(65%) received OPAT via elastomeric flucloxacilin infusions

In conclusion, greater capacity for infection specialist bedside reviews has significantly improved compliance with recommended management of SAB. Elastomeric devices were well tolerated, and improved antimicrobial stewardship. Simple interventions implemented at our busy DGH improved patient outcomes, despite the added pressures of COVID during the re-audit period.

195: XDR enteric fever from northern Pakistan: Spread of drug resistance with implications for management of returning travellers to the UK

Dr Janine Carter[1], Dr Alina Negut[2], Dr Sulman Hasnie[2]
[1]Calderdale And Huddersfield Nhs Trust, Halifax, UK, [2]Bradford teaching hospitals, Bradford, UK

The increasing importation of typhoid caused by extensively-drug resistant Salmonella enteritica serovar typhi in the UK is an important public health risk. This phenotype, usually due to CTX-M mutations plus other resistant mechanisms, has classically been associated with the Sindh region of Pakistan but is becoming more widespread in the Indian subcontinent. Imported cases are likely to rise with the resumption of travel as COVID restrictions in the UK are lifted. We present a case of a 3 year old boy diagnosed with XDR typhoid fever following a visit to relatives in the Rawalpindi region of Pakistan.

The child developed fever and watery diarrhoea following return. Stool sent 12 days post-onset of illness isolated Salmonella enteritica serovar typhi, resistant to all first-line antibiotics. Stool was positive for Giardia by ELISA. The child was said to be improving, playing and eating and drinking with 3 green-coloured, soft stools per day. However blood cultures were positive on day 18 of the illness.

Azithromycin MIC was 4 and the isolate was sensitive to meropenem and ertapenem. He was treated with IV meropenem followed by PO azithromycin with excellent response. Giardia was treated with metronidazole.

This case highlights the need to be aware of the risk of XDR typhoid in returned travellers from the Indian subcontinent: XDR typhoid is spreading in the Indian subcontinent, no longer confined to the Sindh region. We suggest empirical treatment to cover the XDR phenotype for such patients. Azithromycin and meropenem are the most reliable antibiotics in this scenario.

197: Don't let the door hit you on the way out

Dr Grant Ridley[1], Dr Uli Schwab[1,2]
[1]*Newcastle upon Tyne Hospitals, , ,* [2]*Newcastle Universtiy, ,*

38-year-old Ethiopian man presented with a crush injury 2 years ago to left middle finger. One year later treated as cellulitis by GP due to increased swelling and pain with little resolution of symptoms to standard antibiotic treatment. Due to Covid fears, further delayed presentation to plastic surgery.

Swollen left middle finger with erythema distally with traumatic onycholysis and skin epidermolysis. The right index finger was tender over the proximal phalanx with hard swelling on distal phalanx. Severe limited range of movement of hand, unable to make a fist. Evidence of osteomyelitis on x-ray, therefore received empirical treatment with Co-amoxiclav. Which provided little symptomatic improvement.

Cultures yielded s.aureus on enrichment, started on flucloxacillin with minor improvement. Bone biopsy showed florid necrotising granulomatous inflammatory process in bone, suggestive of a mycobacterial infection. Given histology, delay in presentation and failure to respond to empirical treatment he was started on standard quadruple therapy for presumed tuberculosis osteomyelitis. Extended cultures for mycobacterial and fungi also negative. Blood born virus, IGRA and CXR showed no abnormality.

3 months into treatment significant symptomatic improvement in both hands with reduction of swelling in the surrounding skin, soft tissues, and functionality, he will continue for 12 months treatment in total.

This case highlights the need to consider TB osteomyelitis in patients that have failed standard treatment and the need for invasive investigation to avoid diagnostic delay. It also highlights the need for TB to be considered in differentials for dactylitis.

199: Prophylactic antibiotics for the insertion of peritoneal dialysis catheters; a literature review and analysis of local microbiological data

Dr Alyssa Hudson[1], Dr Marina Morgan[1]
[1]*Royal Devon And Exeter NHS Foundation Trust, Exeter, UK*

Background

Antibiotic prophylaxis for peritoneal dialysis (PD) catheter insertion is recommended by the ISPD to reduce risk of early peritonitis. However, the optimal antibiotic regimen has yet to be determined.

Aims

To determine an optimal antibiotic regimen for local use.

Methods

We searched the PubMed database and reviewed relevant studies. We analysed all of our hospital positive PD fluid culture results between 01/07/2017 and 30/09/2020.

Findings

A systematic review of 4 RCTs concluded that while IV vancomycin may reduce the risk of early peritonitis, gentamicin and cephalosporins do not. These results are supported by several observational studies. Four studies reported the organisms isolated from PD peritonitis cases: 65.6% were Gram positive; 9.4% were Gram negative; 21.9% were culture negative.

Locally a total of 146 PD fluid culture isolates were analysed. 69.9% were Gram positive; 25.3% were Gram negative; 2.1% were anaerobes and 2.7% were yeasts. Coagulase negative staphylococci were the most frequently isolated organisms (44.5%), followed by Staphylococcus aureus (10.3%). E. coli was the most frequently isolated Gram negative (7.5%). Coliforms accounted for 14.4% of isolates overall, with Pseudomonas aeruginosa and other Pseudomonads 4.1%.

98.8% of the Gram positive isolates were susceptible to vancomycin. Susceptibility of Gram negative isolates to gentamicin, ciprofloxacin and ceftazidime were 94.6%, 94.4% and 94.3% respectively.

Conclusions

IV vancomycin should be used as antibiotic prophylaxis prior to PD catheter insertion in all cases. In addition, there is sufficient evidence to support adding Gram negative cover to this, with either IV gentamicin, ciprofloxacin or ceftazidime.

201: A case of successfully treated Mycoplasma hominis prosthetic joint infection in the post-traumatic immunocompetent patient.

Dr Suzanna Paterson[1], Mr David Spence[1], Dr Elaine McHenry[1]
[1]*Royal Victoria Hospital, Belfast, Northern Ireland*

Mycoplasma hominis is a frequent coloniser of the lower urinary tract with most reported cases of disease identified post-partum, in neonates and with pelvic inflammatory disease. It is rarely reported to cause disease outside of the genito-urinary tract. Here we describe a case of M. hominis prosthetic joint infection in a 69-year-old immunocompetent man who fell and sustained a complex pelvic fracture requiring an open reduction and internal fixation of the left acetabulum. The patient became pyrexic six days post-operatively with rising inflammatory markers. He was initially treated empirically with Tazocin. Following five days of treatment, M. hominis was isolated from two sets of blood cultures taken at a two-day interval. The patient returned to theatre following CT imaging, which demonstrated a surgical wound collection in close approximation to the inserted metalwork requiring washout and debridement. Blood cultures taken on the day of return to theatre and two days thereafter flagged positive on BacT/ALERTR at 2.5 and 3.2 days. Gram stains were negative. Sub-culture on to chocolate agar grew small colourless colonies aerobically at day 3 and 2 respectively which were identified as M. hominis by MALDI-TOF, and subsequently confirmed by a reference laboratory. Following initial organism identification, antibiotic therapy was changed to clindamycin and levofloxacin based on available literature. Local and reference laboratory sensitivities were confirmed thereafter. The patient improved clinically and was discharged home to complete three months of treatment for suspected prosthetic joint infection. This case demonstrates successful treatment of M. hominis post-traumatic prosthetic joint infection.

205: A case of disseminated pyomyositis caused by Nocardia farcinica

Dr Alyssa Hudson[1], Ms Hope Johnston[1], Dr Josefine Tecklenborg[1], Mr Andrew Titman[1], Dr Jennifer Poyner[1]

[1]*Royal Devon And Exeter Nhs Foundation Trust, Exeter, UK*

Background

Nocardiosis rarely disseminates from a non-pulmonary site of infection. We report a case of disseminated pyomyositis caused by Nocardia farcinica without evidence of pulmonary involvement.

Case description

An 89-year-old male, with recent diagnosis of giant cell arteritis on prednisolone, presented with a 5-day history severe right shoulder pain. He is a keen gardener but denied any trauma. Examination revealed a tender swelling over the right deltoid as well as a painless, fluctuant mass in his right thigh.

Ultrasound and MR imaging demonstrated 10.8x5.1cm and 5.9x3.9cm intra-muscular collections within the deltoid and vastus lateralis respectively.

Pus from the deltoid collection isolated thin, Gram variable, beaded rods after 48 hours of incubation. This was identified as Nocardia farcinica by MALDI-TOF mass spectroscopy and confirmed by 16s rDNA sequencing. Pus aspirated from the thigh collection also isolated Nocardia sp. on enrichment culture after 6 days of incubation.

Serial blood cultures, a transthoracic echocardiogram and an MRI head were unremarkable. A CT chest showed bronchiectasis but no evidence of pulmonary nocardiosis.

Empirical therapy was commenced with oral linezolid. Sensitivity testing, in the absence of EUCAST breakpoint data, suggested susceptibility to co-trimoxazole (zone size 35mm, MIC 0.125). Given planned treatment duration of 3-6 months, therapy was switched to co-trimoxazole with good clinical response at 2 months.

Conclusions

Nocardiosis should be considered in cases of disseminated pyomyositis. Extended incubation is important to avoid overlooking the diagnosis. Nocardia farcinica is frequently co-trimoxazole resistant, however treatment with co-trimoxazole may be considered based on susceptibility results.

206: COVID-19 pneumonitis vs Daptomycin induced eosinophilic pneumonitis: diagnostic challenges during the COVID-19 pandemic

Dr Kanika Sharma[1], Dr Timothy Jones[1], Dr George Chalmers[1], Dr Michael E Murphy[1]
[1]NHS Greater Glasgow And Clyde , Glasgow, Scotland UK, [2]University of Glasgow, College of Medical, Veterinary and Life Sciences , Glasgow, Scotland UK

Daptomycin-induced acute eosinophilic pneumonitis (DAEP) presents with fever, dry cough and hypoxia, similar to SARS-CoV-2 (COVID-19), presenting diagnostic challenges.

Methods

Patients alerted as possible DAEP in NHS Greater Glasgow and Clyde were reviewed by respiratory clinicians to assess the diagnosis against the US FDA definitions for DAEP. Data on patients were collected retrospectively using case note review.

Results

Four patients (3 male; median 79yrs) with DAEP were identified. All were prescribed higher dose daptomycin (~10mg/kg) for enterococcal (vancomycin-resistant) and/or staphylococcal bone and joint infections, including 3 prosthetic-related infections. Respiratory symptoms presented on median day 42 daptomycin (range 14, 71). One patient was positive for COVID-19; for the 3 negative patients, COVID-19 was ruled out with multiple PCRs. CT imaging included COVID-19 in the differential for all 4 patients. No patients underwent bronchoscopy, precluding measurement of BAL eosinophils. Peripheral eosinophils were elevated in 2 patients; 1.21 and 1.69x10^9/L. Daptomycin levels were measured in 3 patients and found to be elevated (levels 50.5, 63.2, 81.9 mg/L;NR 10-20mg/L)). Daptomycin was stopped and DAEP treated with steroids in all patients. Two patients with DAEP, both without COVID-19, died.

Conclusion

Clinical presentations of DAEP and COVID-19 pneumonitis are similar, presenting diagnostic challenges during the ongoing pandemic. Thoracic imaging may not help differentiate, and bronchoscopy to measure respiratory eosinophils is frequently contraindicated. The role of measuring peripheral eosinophils and/or daptomycin levels remains unclear. Mortality was high in this case series. Clinicians prescribing daptomycin should be alert to DAEP as a COVID-19 mimic to avoid delayed treatment.

207: Interleukin 6 Inhibitor prescribing in COVID-19: right patient, right inhibitor, right time?

Dr Matthew Stevens[1], Dr Catherine Sargent[1]
[1]*University Hospitals Sussex, Brighton, UK*

The interleukin-6 inhibitors (IL6I) tocilizumab and sarilumab are both part of the evidence based best-practice guidelines for patients admitted to hospital with severe COVID-19. With increasing numbers of patients admitted with acute COVID-19 and the challenges of bed capacity, these agents are increasingly being prescribed by clinicians unfamiliar with their use. In order to improve prescribing of these agents in our regional infectious diseases centre we undertook a retrospective audit of compliance with local prescribing guidelines for IL6I for a two month period from publication of our local guidelines (13/01/21). Twelve patients were identified in the audit period, all of whom had received tocilizumab. Two patients died during their admission (neither death was attributed to the use of tocilizumab) and two patients experienced suspected tocilizumab related adverse reactions (neutropenia and hypertension) although neither of these was attributed to tocilizumab during their admission. The majority of patients were administered tocilizumab in line with local guidance however two patients were administered tocilizumab in a level 1 setting with a CRP <75. Significant areas identified by the audit where practice could be improved included awareness of adverse events, documentation of multi-disciplinary discussion prior to prescribing, documentation of tocilizumab administration on the discharge summary and provision of patient information sheets. This resulted in the generation of a local prescribing guide and proforma to aid clinicians.

208: A Curious Case of Periprosthetic Listeriosis.

Dr Matthew King[1], Dr Kate Jackson[1], Dr Helena Bond[1], Dr Michael Hunter[1], Dr Hongjie Wen[1], Dr Marcus Pratt[1]

[1]*Royal Victoria Hospital Belfast, Belfast, UK*

A 70 year-old male presented with a 3 day history of progressive confusion, pyrexia and right knee swelling, following 3 admissions to hospital in the preceding 6 months with diarrhoeal illness. Background of right prosthetic knee replacement (nine years prior), type 2 diabetes mellitus, renal calculi, MGUS and was immunosuppressed through Certolizumab and steroids for rheumatoid arthritis. A Debridement, Antibiotics and Implant Retention (DAIR) procedure was performed on day three of admission.

Fluid aspirated from a periprosthetic knee joint effusion, and subsequent intra-operative tissue samples, cultured Listeria monocytogenes, with infection felt to be hematogenous in origin. An echocardiogram and CT thorax/abdomen/pelvis failed to find a persistent focus. CSF and brain imaging did not yield any evidence of CNS infection.

This patient was treated with empiric rifampicin and clindamycin, and certolizumab was held. Following culture results, antibiotics were changed to IV co-trimoxazole. There was a history of penicillin allergy, however following penicillin challenge, he was commenced on IV amoxicillin and gentamicin. White cell count (WCC) and CRP improved following treatment (peak CRP 202 and WCC 13.7) and fevers, swelling and confusion subsided. Following 21 days of intravenous therapy, amoxicillin and gentamicin were stopped and the patient was stepped-down to oral co-trimoxazole to complete a proposed 6 month total antibiotic course.

This case highlights the importance of appropriate sampling when dealing with periprosthetic joint infection, especially in immunocompromised patients, as well as the consideration of atypical pathogens for such patient groups, which would ultimately help to improve clinical outcomes in these cohorts.

209: Mucormycosis: A Twelve Year Single Centre Case Series

Dr. Martine Altidor[1], Dr. Gareth D. H. Turner[2], Mr. Ali Qureishi[3], Dr. Andy Peniket[4], Professor Elizabeth Johnson[5], Dr. Monique I Andersson[1]

[1]Department of Microbiology, John Radcliffe Hospital, Oxford University Hospitals NHS Foundation Trust, Oxford, United Kingdom, [2]Department of Cellular Pathology, Oxford University Hospitals NHS Foundation Trust, Oxford, United Kingdom, [3]Oxford Department of ORL HNS, Oxford University Hospitals NHS Foundation Trust, Oxford, United Kingdom, [4]Department of Haematology, Oxford University Hospitals NHS Foundation Trust, Oxford, United Kingdom, [5]UK National Mycology Reference Laboratory, Public Health England South-West Regional Laboratory, Southmead Hospital, Bristol, United Kingdom

Introduction:

Mucormycosis is caused by a complex group of filamentous fungi. It is characterised by a range of clinical syndromes which manifest primarily in diabetic and immunocompromised hosts. Delayed diagnosis is associated with high mortality and morbidity. The aim was to assess management in order to improve patient pathways.

Methods:

We performed a retrospective analysis of all patients with a confirmed laboratory diagnosis (histopathology and microbiology) of mucormycosis in the last 12 years from OUHFT. Hospital paper and electronic patient records were reviewed.

Results:

Seven patients were identified with mucormycosis between 2009 and 2021. Six cases were male, median age 54 years (range 45-67). Six cases had underlying haematological disease. One case was a postmortem diagnosis. Primary site of disease was sinuses in 3 cases, lung in 1, spleen in 1, and 2 disseminated. Fungal species were identified by molecular means in 3 cases: Lichtheimia corymbifera, Rhizopus pusillus, Rhizopus microsporus. All cases were confirmed as invasive mucormycosis on histology (7/7). All cases received Ambisome, 2 cases received dual therapy with isavuconazole. 5/7 attributable deaths.

Conclusion:

The prognosis of patients with mucormycosis is poor. MDT management including early aggressive surgery and early institution of antifungals improves outcomes. Laboratory diagnosis should be pursued since it informs management.

210: Rare case report of subconjunctival Dirofilaria repens infestation in United Kingdom

Dr Vishal Vohra[1], Mr. Jaswant Sandhu[1], Dr Manjusha Narayanan[1]
[1]*Royal Victoria Infirmary, Newcastle Upon Tyne, United Kingdom*

Background:

A case of subconjunctival infestation with Dirofilaria repens that has been rarely reported in the United Kingdom.

Methods:

An 80-year-old female presented to the eye emergency department complaining of redness, discomfort and chemosis to the left eye. A sub-conjunctival worm was noted, and urgent surgical extraction undertaken. The worm was sent for further identification analysis. The patient gave a history of travelling to the Gambia regularly for the last 20 years. No history of any systemic symptoms

Results:

On slit-lamp examination, the worm was noted to be a mobile structure in the temporal bulbar sub-conjunctival space. Patient serology was positive for Dirofilaria repens but no microfilariae were isolated on a peripheral blood smear. Parasitology suggested the organism to be Dirofilaria repens.

Conclusions:

Humans are an uncommon and accidental host of Dirofilaria repens which is rarely seen in the United Kingdom but should be considered as a differential diagnosis to other nematode ocular infections. A travel history is very helpful in diagnosing potentially involved organisms due to their endemicity in certain countries. No further treatment was necessary beyond surgical removal since this organism fails to mature and thereby does not cause microfilaraemia in humans.

211: An Unusual Fungal Infection

Doctor Rose Harrison[1], Doctor Janine Carter[1], Doctor Azzam Ismail[1], Doctor Tanveer Khalid[2], Doctor Penny Lewthwaite[1]

[1]Leeds Teaching Hospital Trust, Leeds, United Kingdom, [2]Bradford Royal Infirmary, Bradford, United Kingdom

Introduction: A 40-year-old man presented to a local district general hospital, following an eight month stay in rural Pakistan, with weight loss and cough. Initial investigations revealed a new diagnosis of diabetes, elevated CRP 100 and eosinophilia 0.8. Chest imaging showed multifocal inflammatory changes. He underwent sampling for tuberculosis and commenced empirical tuberculosis treatment.

During hospital admission he developed progressive left sided weakness, neurological imaging showed several ring enhancing lesions and nasal sinus inflammation. CT imaging revealed splenic lesions. He was transferred to a tertiary neurosurgical centre and underwent aspiration of right parietal abscess. The patient deteriorated rapidly developing a flaccid paralysis; he was commenced on broad spectrum antibiotic therapy and anti-fungals whilst awaiting investigations. Despite being commenced on combined antifungal therapy with Amphotericin B and Isuvaconazole the patient died a few weeks into treatment.

Results: Brain pus was negative for bacteria and TB but histopathology showed pauci-septate non-pigmented fungal hyphae. Fungal culture was negative but pan fungal PCR performed on brain pus revealed a diagnosis of Apophysomycoses variabilis.

Discussion: Apophysomycoses variablis is a tropical mucoraceous mould commonly found in Southern Indian continent (Think you should with say Southern India or the Indian sub-continent) and is emerging as a pathogenic fungus. It is more usually associated with cutaneous or subcutaneous infections often as a result of trauma or inhalation from environmental sources rather than disseminated infections. As with other species of mucoraceous moulds it is associated with rapid disease progression and high mortality rate.

212: Communicating Infection in Undergraduate Medicine: Can the Germbugs help?

Miss Lucy Pangbourne[1]

[1]*University Of Leeds*

The Germbugs are an arts-based teaching resource comprising a storybook of narrated illustrated characters designed to enhance engagement and retention of microbiological knowledge.

Aims

This study explored how medical students explain infectious processes and identified any detectable differences in students' communication after completing a standard microbiology lecture and the Germbugs storybook.

Methods

Five individual interviews were conducted, whereby students explained the process of infection in response to clinical scenarios, once after watching a microbiology lecture and then after completing the Germbugs. Codebook thematic analysis explored scenario responses and student reflections on the experience. Scenario recordings were also analysed by two patients who identified valuable features in explanations, and a microbiologist who rated the scientific accuracy. The four perspectives (researcher, student, patient, and microbiologist) were collated to identify recommendations for future educational practice.

Findings

Findings indicated an overwhelmingly positive response to the Germbugs. After completing the Germbugs, students' explanations appeared more fluent, comprehensive, and patient-friendly. Students commended the simplicity and engagement of the illustrated story. Patients valued raised confidence and students' use of accessible language to provide reassurance. Scientific accuracy was retained or improved as the science successfully merged with the story.

Conclusion

Findings suggest the Germbugs supported students in simplifying scientific concepts and using accessible terminology in explanations. Some detectable differences in students' communication after reading the Germbugs were noted. An appetite for art-based teaching as an engaging method of learning was evident. This study provided endorsement of the Germbugs learning resource, informing curriculum integration to achieve maximal learning impact.

213: Achromobacter xylosoxidans infective endocarditis of a tissue mitral valve replacement in an immunocompetent elderly man

Dr Jennifer Holland[1], Dr Vanessa Lythe[1], Dr Alexandra Pain[1], Dr Ruby Devi[1], Dr Karthiga Sithamparanathan[1], **Dr Ailva O'Reilly[1]**

[1]Buckinghamshire Healthcare NHS Trust, , United Kingdom

Achromobacter species are rarely implicated as the causative organism in infective endocarditis, especially in the immunocompetent.

We describe a case of non-native tissue mitral valve endocarditis in a frail 86-year-old gentleman with multiple co-morbidities. Over five months (2020-2021), the patient experienced relapsing episodes of Achromobacter xylosoxidans bacteraemia. Treatment was in line with antimicrobial susceptibility testing results based on the latest EUCAST breakpoints and for prolonged durations.

During the 1st admission, there was a radiological diagnosis of osteomyelitis involving the left foot which we treated with intravenous Piperacillin/Tazobactam followed by oral Co-trimoxazole, for a total of six weeks.

During the 2nd admission, the patient continued to have recurrent positive blood cultures whilst on intravenous Piperacillin/Tazobactam and transthoracic echocardiogram (TTE) revealed a suspicious mobile echogenic structure in the left ventricular outflow tract, attached to the mitral valve chordae. Therefore, treatment was changed to intravenous Meropenem 2g TDS. The bacteraemia then resolved, and the patient completed 6 weeks of IV Meropenem at 2g TDS.

However, the patient re-presented, and further blood cultures were positive with Achromobacter xylosoxidans. Intravenous Meropenem 2g TDS was therefore re-started and repeat TTEs continued to demonstrate the mobile echogenic structure, with measurements suggesting possible enlargement. Therefore, a further 6 weeks of intravenous Meropenem 2g TDS along with intravenous Co-trimoxazole as an inpatient was completed. The patient is currently on oral Co-trimoxazole at a dose of 960mg BD. We have advised the Cardiology team to determine the final duration of antimicrobial treatment using results of serial OPD PET-CT scans.

214: The Impact of COVID-19 on the TB Control Programme in England: A Quantitative Analysis

Mr Kim Alipio[1], Dr Bayad Nozad[2], Dr Hilary Watt[3], Professor Azeem Majeed[4]

[1]Imperial College London, London, England, [2]Public Health England, Totnes, England, [3]Imperial College London, London, London, [4]Imperial College London, London, London

Background

TB remains a global public health issue and leading infectious disease killing over one million people annually. Unfortunately, decades of efforts to reduce the prevalence and mortality of TB could be put at risk by the recent COVID-19 pandemic given the worldwide policies to reassign healthcare workers and lockdowns. There is no exploration of this impact on the National TB Control Programme within England in regard to progress indicators. This study aims to investigate this impact through quantitative data analysis.

Methods

Negative binomial regression analysed publicly available and NHS England datasets in order to estimate the effect of variables such as national lockdowns on TB cases nationally. The main outcome measures were the relative differences in the monthly number of culture-confirmed pulmonary TB cases and monthly rate of latent TB cases. Descriptive analysis was used to investigate the impact on TB reporting delay and treatment delay.

Results

Reductions in TB cases during months of national lockdown (0.871 [95% CI 0.760 – 0.999]) and during the pandemic (0.770 [95% CI 0.689 – 0.862]) were found nationally. No changes were found with TB reporting delay and treatment delay.

Conclusions

This is the first study exploring the threats posed by the pandemic on TB control in England. It is important for any future strategy to consider this study's results to ensure TB Control is prioritised nationally.

215: Assessment of VITEK 2 Antimicrobial Susceptibiltiy Testing of E.coli Isolates from Positive Blood Cultures after 6 hours Incubation

Dr Mairi Macleod[1], John Bingham, Mary Kilpatrick, David Jordan
[1]*NHS Greater Glasgow And Clyde, ,*

Introduction: Gram negative bacteraemia is a significant cause of morbidity and mortality. Availability of reliable antimicrobial susceptibility results (AST) at an early stage supports optimal patient management as well as antimicrobial stewardship. In our laboratories, positive blood cultures are subcultured to solid agar and formal AST set up the following day on the Vitek 2 as per manufacturer recommendations using cultures between 8 and 24 hours incubation. This study assessed the performance of Vitek 2 AST in E. coli isolates from positive blood cultures after only 6 hours incubation.

Methods: Positive blood cultures were cultured onto blood agar and incubated for 6hrs. Where sufficient growth was present, isolates were identified using the Vitek MS and processed on VITEK 2 for AST. Results were documented and compared with results from the laboratory's standard AST process.

Results: 137 E. coli isolates had duplicate AST performed at 6 hours and ≥18 hours. Collectively 2329 antibiotics were duplicate tested. There was 99.2% (2310/2329) concordance of susceptibility interpretation according to EUCAST 2021 breakpoints. 6 very major errors and 13 major errors were identified but, in most instances, these antibiotic interpretations would not have been reported to ward clinicians due to other features in the antibiogram. In addition, ESBL and carbapenemase producing E. coli were correctly flagged on 6 hour AST

Discussion: Performance of VITEK 2 AST at 6hrs incubation was determined to be reliable and availability of final AST results a day earlier permits confident optimisation of antibiotic therapy and patient management.

216: Key recommendations from the Joint Healthcare Infection Society (HIS) and Infection Prevention Society (IPS) guidelines for the prevention and control of meticillin-resistant Staphylococcus aureus (MRSA) in healthcare facilities

Prof John Coia[1], Prof Jennie Wilson[3], Dr Aggie Bak[2], **Dr Gemma Marsden[2]**, Prof Heather Loveday[3], Prof Hilary Humphreys[4], Dr Neil Wigglesworth[14], Dr Alicia Demirjian[5], Julie Brooks[6], Lisa Butcher[7], Dr James Price[8], Dr. Lisa Ritchie[9], Dr William Newsholme[10], Dr David Enoch[11], Jennifer Bostock, Maria Cann[12], Prof A. Peter R. Wilson[13]

[1]Hospital South West Jutland & University of Southern Denmark, , Denmark, [2]Healthcare Infection Society, London, United Kingdom, [3]University of West London, London, United Kingdom, [4]Royal College of Surgeons in Ireland & Beaumont Hospital, Dublin, Ireland, [5]Public Health England & Evelina Hospital & KCL, London, United Kingdom, [6]University Hospital Southampton NHS Foundation Trust, Southampton, United Kingdom, [7]Oxford University Hospitals NHS Foundation Trust, Oxford, United Kingdom, [8]Imperial College Healthcare NHS Trust, London, United Kingdom, [9]NHS England and NHS Improvement, , London, United Kingdom, [10]Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom, [11]Addenbrooke's Hospital, Cambridge, United Kingdom, [12]MRSA Action UK, Preston, United Kingdom, [13]University College London Hospitals NHS Foundation Trust, London, United Kingdom, [14]East Kent Hospitals University NHS Foundation Trust, Canterbury, United Kingdom

Methicillin-resistant Staphylococcus aureus (MRSA) infections remain a serious cause of healthcare-acquired infection in many countries. MRSA is spread by multiple routes and persist in the environment for long periods. Infection prevention and control (IPC) measures and control of the use of antimicrobials are effective in reducing prevalence of MRSA. There have been many publications related to MRSA since the last guideline was published in 2006 and this update contains further measures that are clinically effective for preventing transmission when used by healthcare workers.

A systematic review of the literature was performed in accordance with NICE-approved methodology and critical appraisal followed SIGN and other standard checklists. The questions for review were derived from a stakeholder scoping meeting, which included patient representatives, in accordance with the Patient Intervention Comparison Outcome (PICO) process.

The review process retrieved articles from Embase, Medline and CINAHL/Emcare that were published between 2004 and February 2021.

Evidence-based recommendations have been made in the following areas: screening, environmental screening and cleaning/disinfection, surveillance and infection control precautions.

We will summarise the key recommendations from the guideline, and also introduce good practice points and recommendations for research.

218: What happens to patients exposed to SARS-CoV-2 in hospital?

Dr Rhys Wenlock[1], Dr Matija Tausan[1], Dr George Stoyle[1], Dr Holly Hendron[1], Dr Oscar Buchanan[1], Dr Zachary Tait[1], Dr Bethany Whittle[1], Dr Samuel McInerney[1], Dr Jessica Blackaby[1], Mr Andrew Davies[1], Mr Martin Still[1], Dr Catherine Sargent[1]

[1]*University Hospitals Sussex Nhs Foundation Trust, ,*

Background

Exposure to SARS-CoV-2 was widespread in hospitals during 2020. The risk of infection after in-hospital exposure has not yet been quantified and effective strategies to prevent it remain unclear.

Methods

All incidences of patient-to-patient exposure to SARS-CoV-2 on non-COVID wards between October and December 2020 at a UK hospital trust were identified. Patient contacts were traced, and data collected on SARS-CoV-2 testing, symptoms, and outcomes. Factors associated with acquiring infection and mortality were investigated.

Results

Of 575 patients exposed, 118 (19.5%) tested positive within 14 days of their exposure, with secondary attack rates (SAR) ranging from 0 to 72%. 68.6% (81/118) of secondary cases had not been in the same bay as the index case.

For exposed patients, sharing a bay with the index case and having spent longer on the ward with them were associated with acquiring infection (ORs of 3.8, 95% CI: 1.89, 7.74, and 1.08, 95% CI: 1.01, 1.15 respectively). 71% of secondary cases tested positive while asymptomatic and 94.6% had tested negative earlier in their admission.

Conclusions

This is the first study to describe the outcomes of a cohort of patients exposed to COVID-19 in hospital. Exposure to COVID-19 in hospital commonly leads to transmission that is not confined to the index case's bay. This study confirms that asymptomatic testing is important and suggests that an increased frequency of testing may be beneficial. Moreover, we provide factors that can be used to identify the contacts at the greatest risk of acquiring infection.

219: It is not always COVID-19: Pneumocystis jirovecii pneumonia mimicking COVID pneumonitis

Dr Zainab Ezimokhai[1], Dr Jessica WY Wan
[1]*Bradford Teaching Hospital Foundation Trust, bradford , England*

A 13 year old girl presented to the paediatric assessment unit with a 2 day history of exertional breathlessness and chest tightness. She had increased work of breathing requiring supplemental oxygen. Her chest x-ray showed bibasal haziness with increased opacity throughout her lung fields. She was treated for a chest infection with intravenous antibiotics without much improvement. On day 3 of admission, a CT scan of her chest showed changes in keeping with COVID pneumonitis therefore she was commenced dexamethasone. Of note her PCR and antibodies for SARS-CoV-2 were negative.

The patient was born in Sierra Leone and moved to the UK at 8 months of age. Over the last two years she had multiple GP attendances with lethargy, reduced appetite and fever. The GP noted persistently mildly decreased lymphocyte and neutrophil counts. Examination revealed severe oral thrush. Her history and clinical findings raised suspicion of retroviral infection on admission. Subsequent investigations showed a retroviral PCR of 197,000 copies/ml, a CD4 count of 14cells/ul, a positive sputum culture for pneumocystis jirovecii and a beta-D-glucan >500pg/ml. She was commenced on Co-trimoxazole and improved. On discharge she was given an appointment to be seen the following week by a paediatrics infection diseases consultant.

This case highlights how demographics, a detailed past medical history and a high index of suspicion were essential in reaching the right diagnosis despite clinical and radiological findings consistent with COVID pneumonitis.

220: Can Selective Digestive Decontamination reduce the need for systemic antibiotics in patients with recurrent biliary sepsis?

Dr Joanna Lumb[1], Dr Amy Belfield[1], Jade Lembo[1], Claire Lovett[1], Mr Rohan Thakkar[1], Mr Sanjay Pandanaboyana[1]

[1]*Newcastle Upon Tyne Hospitals, Newcastle upon Tyne, United Kingdom*

Selective digestive decontamination (SDD) regimes are used to prevent ventilator associated pneumonia in critically ill patients, by reducing the oropharyngeal and intestinal carriage of potentially pathogenic micro-organisms.

A 76 year old man was repeatedly admitted with symptoms of cholangitis to the regional Hepatobiliary Surgery service at the Freeman Hospital, Newcastle upon Tyne, over a 14 month period.

In 2019, he underwent a laparoscopic cholecystectomy for severe chronic cholecystitis. An incidental diagnosis of well differentiated adenocarcinoma was made on the basis of histological examination of the gallbladder. He subsequently underwent an open liver resection and bile duct resection with Roux-en-Y biliary reconstruction. Following this, he was admitted on multiple occasions with recurrent symptoms of cholangitis, secondary to reflux up the biliary limb of the Roux-en-Y. Management of cholangitis included metoclopramide, a prolonged course of broad spectrum antibiotics, and further surgery to lengthen the biliary limb from 50mm to 90mm.

He had a further 12 admissions over the following year, requiring broad spectrum antibiotics for cholangitis. His symptoms returned soon after completing each course. Long term suppression of symptoms with oral antibiotics was deemed unsuccessful. The patient was eventually commenced on the SDD regimen used in the critical care wards at the Freeman Hospital: oral neomycin, colomycin, and nystatin. He has remained free of symptoms for 7 months so far, avoiding further hospital admissions and intravenous antibiotics.

This case demonstrates a potential alternative use for SDD in preventing recurrent ascending cholangitis, thus reducing the need for systemic antibiotics.

221: Gallbladder ascariasis in the first trimester of pregnancy - a case report and discussion of management options

Dr Jil Shah[1], **Dr Anne Melhuish[1]**, Dr Caroline Oswald[1], Ms Zara Tariq[1], Dr Hugh McGann[1], Dr Penny Lewthwaite[1]
[1]*Leeds Teaching Hospitals NHS Trust*

Case

A 25-year-old female presented with severe right upper quadrant pain which had been present intermittently for 11 months since she moved to the UK from Sudan. Investigations demonstrated deranged liver function, prompting an abdominal ultrasound. This showed gallbladder ascariasis. The patient was also found to be 6 weeks pregnant.

Discussion

Ascaris lumbricoides are transmitted via faecal contamination of soil and water with infective eggs. These develop into adult worms in the small intestine. Migration of adult worms into the biliary tract may cause cholecystitis, biliary colic or pancreatitis.

Acute symptoms associated with biliary ascariasis should be managed supportively, then anti-helminth therapy given after symptoms resolve. Endoscopic or surgical management is only required if acute symptoms do not resolve.

Benzimidazoles (albendazole and mebendazole) are the mainstay of treatment for ascariasis. Some animal studies have indicated potential teratogenicity, therefore they are not recommended in the first trimester. The UK Teratology Information Service notes that in 1200 documented first trimester exposures to mebendazole there was no increased risk of congenital malformation, but highlights that this number is insufficient to exclude a risk. Other potential anti-helminths such as pyrantel pamoate are not available rapidly in the UK.

The clinical team considered the potential risks of benzimidazole therapy in the first trimester against the potential risks of untreated biliary ascariasis. Options of immediate treatment versus waiting until the second trimester were discussed with the patient, who elected for immediate mebendazole therapy. She remained asymptomatic through pregnancy, and had a healthy baby born at term.

222: Investigation and management of Staphylococcus aureus bacteriuria: are we doing too much or too little?

Dr Claire Mason[1], Dr Alka Sobti[1], Dr Anna Goodman[1]
[1]*Guy's And St Thomas' NHS Foundation Trust, London, United Kingdom*

Introduction: Staphylococcus aureus is isolated in around 0.2-4% of positive urinary cultures, more commonly in the contexts of long-term care, urological abnormalities and procedures, male sex, older age and co-morbidities. Isolation may represent contamination, colonisation, urinary tract infection or bacteraemic seeding from another site, and may be linked to Staphylococcus aureus bacteraemia. However, there is little guidance on investigation and management of Staphylococcus aureus bacteriuria. We performed a retrospective analysis of cases, including clinical characteristics, investigations and treatment.

Methods: Data were collected on all urine samples taken from adult patients over a one-year period from which Staphylococcus aureus was isolated.

Results: 111 urine cultures positive for Staphylococcus aureus were identified. 37% of patients were symptomatic. 62% received antibiotics. 27% had a repeat urine culture taken. There was no significant difference in rates of recurrence in those who were treated with antibiotics compared to those who were not treated (n=97, p=0.65). Only 12% of patients had blood cultures taken within a month of their urine culture and of these only 2 (15%) were positive. In both cases blood cultures were taken after the patients became clinically septic after bladder instrumentation.

Conclusions: Whilst this is a small cohort, it is comparable to other studies of Staphylococcus aureus bacteriuria. Our experience does not support the routine taking of blood cultures or treatment of asymptomatic bacteriuria in well patients with Staphylococcus aureus bacteriuria. However, repeat urine culture, and investigation and treatment of higher risk patients, for example prior to bladder instrumentation, may be warranted.

223: An Audit of Antifungal prescribing and use of fungal diagnostic markers in Haematology and Oncology patients at Buckinghamshire Healthcare NHS Trust

Miss Katarzyna Pazik[1], Mrs Claire Brandish[1], Dr Jean O'Driscoll[1]
[1]*Buckinghamshire Healthcare NHS Trust, Stoke Mandeville, United Kingdom*

Background

Invasive fungal infections are difficult to diagnose and have a high mortality rate; treatments are costly, require close monitoring and have significant side effects. Antifungal stewardship (AFS) aims to reduce inappropriate antifungal use to improve outcomes and reduce the risk of resistance.

Aims

To assess the Trust against standards specified in the Medicines Optimisation Commissioning for Quality and Innovation (CQUIN) relating to Antifungal Stewardship and its compliance with the Trust's Antifungal guideline for Haematology / Oncology patients, with a view to identifying potential improvements.

Method

Dispensing records were used to identify adult haematology / oncology in-patients who were initiated on non-stock antifungal treatment regimens between April 2019 and September 2020. Patient medical and microbiology records were used to complete the AFS CQUIN audit tool.

Results

-62% of patients had treatment prescribed in accordance with the Trust guideline (N=8/13)

-69% of patients initiated on treatment had a documented AFS review at 48-72hrs (N=9/13)

-91% of patients on empirical treatment had an appropriate diagnostic investigation within 72hrs (N=10/11)

-73% of patients on empirical treatment had a proven or probable infection. (N=8/11)

Conclusions

This demonstrated the Trust's progress in implementing AFS and has established the baseline performance. Although the audit has several significant limitations, it does show that all standards have been met (60% threshold). To further this progress, we have suggested a tracking and referral system, and a review of the Trust's guidance for antifungals to include other patient groups, and to provide clarity for patients already receiving prophylactic antifungal agents.

224: Safety of linezolid in patients prescribed concurrent serotonergic drugs: A single centre retrospective study

Mr Gulzar Uddin[1], Mr Stephen Hughes[2]

[1]Imperial College London, School of Medicine, London, United Kingdom, [2]Pharmacy department, Chelsea & Westminster NHS Trust, London, United Kingdom

Background:

Linezolid is widely used for complicated Gram positive infections. Due to its weak monoamine oxidase inhibitory effects, it has traditionally been contra-indicated in patients prescribed concurrent serotonergic drugs, due to a risk of serotonin toxicity (ST). This retrospective study assesses the ST risk of trialled combination therapy at Chelsea and Westminster NHS Trust.

Methods:

All in-patients treated with >24 hours of linezolid plus a serotonergic drug (administered within 7-days of prescribing) were analysed at a single centre acute NHS trust (April 2016 - January 2021). Concurrent serotonergic drugs analysed included all selective serotonin reuptake inhibitors (SSRIs), serotonin-norepinephrine reuptake inhibitors (SNRIs), selective serotonin receptor agonists, tricyclic antidepressants, monoamine oxidase inhibitors (MAOIs), and mirtazapine. Electronic medical records were reviewed for clinical features consistent with Sternbach or Hunter criteria; patients were graded on probability of ST. The study was registered as service evaluation with the Trust clinical governance team.

Results:

51 patients were included and assessed for possible ST complications; two had an unlikely diagnosis of ST where an alternative aetiology was diagnosed. No patients had a likely or documented diagnosis (0%); thus, relationship between concurrent serotonergic drug dose and ST could not be assessed. Mean prescribed dose for most serotonergic drugs was ≤50% of maximum licensed dose.

Conclusion:

Within this small retrospective study, no patients developed ST features with linezolid combined with a contra-indicated therapy. This confirms literature findings that linezolid-associated ST incidence is low. Coadministration of linezolid with serotonergic drugs may be considered under close patient monitoring and counselling.

225: Phenotypic and genotypic characterisation of antimicrobial resistance in Clostridioides difficile in North Wales

Rachel Thomas[1], Dr Bryony Coupe[1], Claire Morgan[1], Matt Bull[3], Trefor Morris[2], Michael Perry[2], Sarah Copsey-Mawer[2]

[1]Swansea University School of Medicine, Swansea, United Kingdom, [2]UK Anaerobe Reference Unit , Cardiff, United Kingdom, [3]Public Health Wales Pathogen Bioinformatics, Cardiff, United Kingdom

Clostridioides difficile poses a major infection control challenge and remains a huge burden to our healthcare system. The emergence of hypervirulent strains of C. difficile has highlighted the need for monitoring antimicrobial resistance (AMR) and continual epidemiological vigilance. Agar dilution is the current gold standard method for antimicrobial susceptibility testing of C. difficile and the method routinely utilised in the Public Health Wales (PHW) UK Anaerobe Reference Unit (UKARU) at the University Hospital of Wales, Cardiff. However, this method is laborious and time consuming. Meanwhile, the emergence of whole genome sequencing (WGS) introduces the possibility of acquiring rapid genotypic information in terms of AMR.

In this research project, isolates obtained from faecal samples submitted across the Betsi Cadwalader health board (BCUHB) that were either GDH or PCR positive were sequenced as part of the C. difficile Genomic Sequencing and Typing (DIGEST) pilot project performed at the PHW Pathogen Genomics Unit (PenGU) in Cardiff. Results highlights include the finding that 93% of the isolates analysed for the presence of AMR genes were found to have the cdeA gene associated with conferring resistance to fluoroquinolones such as ciprofloxacin. Other common genes observed included blaCDD-1 and blaCDD-2, associated with β-lactam resistance. While further work must be done to link genotypic characterisation with phenotype, this study provides a valuable insight into AMR mechanisms in C. difficile, and may in future become an important tool providing early indication of shift in C. difficile epidemiology or the emergence of a new hypervirulent and multi-drug resistant strain.

226: Community-Acquired Brain Abscess: A 5-year Case Series

Ms Saniya Mediratta[1], **Dr Megha Anil[2]**, Mr Matthew Garnett[1], Dr Olajumoke Sule[3], Mr Ibrahim Jalloh[1], Dr Elinor Moore[4], Dr Isobel Ramsay[3,4]

[1]Division of Neurosurgery, Department of Clinical Neurosciences, Addenbrooke's Hospital and University of Cambridge, Cambridge Biomedical Campus, Cambridge, United Kingdom, [2]School of Clinical Medicine, University of Cambridge, Cambridge, United Kingdom, [3]Clinical Microbiology and Public Health Laboratory, Addenbrookes Hospital, Cambridge, United Kingdom, [4]Department of Infectious Diseases, Addenbrooke's Hospital and University of Cambridge, Cambridge Biomedical Campus, Cambridge, United Kingdom

Introduction

Brain abscess remains a challenging clinical problem requiring neurosurgical and microbiological management. Evaluation of the investigation, medical and surgical management of these cases is key to improving care.

Methods

All adult cases of community-acquired brain abscess admitted to a UK tertiary centre between 2014 and 2020 were retrospectively reviewed. Data were collected on patient characteristics, investigations, and management.

Results

106 patients (63% male, median age 54) were included. 17/106 (16%) were known to be immunosuppressed. 81 (76.4%) were transferred from regional hospitals and 90 (85%) were admitted under neurosurgery.

Causative organisms were identified in 95/106 cases (17/95 polymicrobial). Anginosus group streptococci (41/95, 43%) and Staphylococcus aureus (10/95, 11%) were most commonly identified. Anaerobes were identified in 23/95 (24%) cases. In 71/95 (75%) cases, the causative organism was identified on culture of abscess fluid, 13/95 (14%) were identified by blood culture only. 73 (68.9%) were solitary abscesses. A source was identified in 70 cases, commonly sinus (16/70), otogenic (15/70) or dental (14/70). Investigating the underlying source showed inconsistency between cases caused by similar organisms e.g. only 17/41 Anginosus group streptococcus cases underwent OPG.

95 cases (89.6%) underwent surgery, with 33 patients requiring re-operation. 81 (76.4%) patients were discharged prior to completing their antibiotic course; 52 discharged to their referring hospital and 29 to OPAT. Inpatient mortality was 9.4%.

Conclusion

The Streptococcus anginosus group predominate in community-acquired brain abscess with abscess fluid commonly culture positive. Source investigation is inconsistent and management remains multidisciplinary and complex, highlighting a need for national guidance.

227: Cryptococcal spondylodiscitis in a relatively immunocompetent patient – a lesson in microbiological sampling

Dr Matthew Powell[1], Dr Nicola Maddox[1], Dr Rob Porter[1], Dr Marina Morgan[1]
[1]*Royal Devon and Exeter NHS Foundation Trust*

A 62-year-old with a background of liver cirrhosis presented with six weeks of worsening back pain. An MRI spine showed marked destruction of the T7-T8 vertebral bodies with extraosseous fluid adjacent to the disc suggestive of spondylodiscitis. Histological analysis of a subsequent biopsy showed partially necrotic tissue and signs of chronic inflammation with no granulomas present. A gram stain showed no organisms and there was no bacterial growth on direct and extended culture on blood, chocolate, CLED (Cystine-lactose-electrolyte deficient) and Neisseria media. The patient was treated for a spondylodiscitis of a presumed bacterial aetiology with oral clindamycin for six weeks. However, the patient's back pain significantly worsened and he represented to hospital eight weeks later. A CT spine demonstrated progression of the spondylodiscitis with a subsequent evolving Gibbus deformity. Spinal stabilisation surgery was required and intraoperative samples grew Cryptococcus neoformans var grubii after extended incubation on blood agar. Retrospective staining of the biopsy from his original presentation with Grocott's methenamine silver stain revealed yeast cells within the tissue consistent with C. neoformans. Treatment was initiated with intravenous amphotericin with oral flucytosine for 2 weeks, followed by oral fluconazole lifelong, which significantly improved the patient's symptoms.

This case demonstrates a rare cause of spondylodiscitis in a relatively immunocompetent individual with no clear risk factors for cryptococcosis. It also highlights the need to consider fungal aetiologies in bone and joint infection, and therefore to ensure that appropriate fungal media is included for orthopaedic specimens to ensure rare diagnoses are not missed.

228: An audit of hepatitis B virus screening and management in haematopoetic stem cell transplant (HSCT) recipients at Oxford University Hospitals NHS Foundation Trust.

Dr Sheila F Lumley[1,4], Mr Ben Brazier[1], Ms Christina Ovas[2], Mrs Sarah Cripps[3], Dr Jane Collier[3], Professor Philippa C Matthews[1,4], Dr Andy Peniket[2], Dr Monique I Andersson[1,5]

[1]Department of Microbiology, Oxford University Hospitals NHS Foundation Trust , Oxford , UK, [2]Department of Clinical Haematology, Oxford University Hospitals NHS Foundation Trust , Oxford , , [3]Department of Hepatology, Oxford University Hospitals NHS Foundation Trust , Oxford , , [4]Nuffield Department of Medicine, University of Oxford , Oxford , , [5]Nuffield Division of Clinical Laboratory Science, University of Oxford, Oxford

Introduction

It is essential to identify patients with past or current Hepatitis B virus (HBV) infection undergoing immunosuppressive therapy due to the risk of reactivation and chronic liver disease.

Methods

We audited HBV management in HSCT recipients at OUHFT from 2016-2020 against the following standards from our local guidance:

1) Screening: HBsAg and anti-HBc performed pre-HSCT

2) Prophylaxis: Appropriate prophylaxis given:

i. HBsAg positive – entecavir or tenofovir

ii. HBsAg negative and anti-HBc positive – lamivudine

3) Monitoring: Monthly HBV DNA

4) Referral: Discussed with HBV specialist within 3 months of HSCT

Results

Between January 2016–December 2020, 610 patients received HSCT.

1) Screening: 550/610 (90%) individuals were screened for HBsAg and anti-HBc pre-transplantation.

2) Prophylaxis: 23/550 (4.2%) patients were anti-HBc +/- HBsAg positive on screening (one false positive anti-HBc was excluded). Of the two individuals who were HBsAg positive, both were on appropriate prophylaxis pre-transplant. Of the 21 individuals who were HBsAg negative/anti-HBc positive, 16 started on prophylaxis with lamivudine pre-transplantation, a further two began after transplantation and three did not receive any prophylaxis.

3) Monitoring: In the 6 months following transplant, the median number of times HBV DNA was performed was one (IQR 0-2, range 0-4) and no patients had HBV DNA measured monthly.

4) Referral: Only 6/23 (26%) patients were referred.

Conclusion

Although appropriate prophylaxis is given in the majority of cases with identified HBV infection, further work is required to improve the rate of screening, increase the frequency of viral load monitoring, and improve hepatology referral rates.

229: Sight loss resulting from chiasmitis secondary to chronic Staphylococcus aureus sinusitis

Dr Joanna Walker[1]

[1]NHS Grampian, Aberdeen, Scotland

Introduction

Chiasmitis is a condition characterised by acute vision loss arising from an inflammatory or infectious - viral, mycobacterial, parasitic, or fungal- aetiology. The role of Staphylococcus aureus has rarely been reported.

Case

A 23 year old female was admitted to hospital with a several hour acute bilateral vision loss, fever, and meningism. The patient had no significant past medical history except a recent 6 week history of sinusitis and headache. Her blood and CSF findings showed raised WCC at 20 and 924 respectively, with a CRP of 100.

She was admitted under emergency care of ID, ENT and Ophthalmology with guidance from Neuroradiology. Her MRI orbits showed sphenoid sinusitis with subdural empyema and inflammation of the optic chiasma and nerves.

She received empirical liposomal Amphotericin B, Ceftriaxone, and Amoxicillin, and underwent emergency drainage of pus from maxillary, ethmoid and sphenoid sinuses. An optic neuritis treatment regimen of high dose IV Methylprednisolone was used to halt rapidly deteriorating bitemporal hemianopia and central scotoma. Staphylococcus aureus was subsequently isolated from sinus pus.

Her progressive visual loss stabilised, and alongside serial imaging, her subdural empyema was treated for a 16 week course of IV Ceftriaxone then oral Co-Trimoxazole.

Discussion

An important challenge in this case was the context of uncertainty in rare condition management, and to recognise the value of different specialty colleagues acting jointly to circumvent the paucity of available evidence and treatment precedent, to support complex clinical decision making.

230: I can see clearly now the worm has gone: A Parasitic 'Plus One'

Dr Ashleigh Mcmaster[1], Mr Scott Foggett[2], Dr Richard Capstick[1]

[1]Department of Infectious Diseases and Tropical Medicine, Newcastle upon Tyne Hospitals, Newcastle upon Tyne, United Kingdom, [2]Microbiology Department, Newcastle upon Tyne Hospitals, Newcastle upon Tyne, United Kingdom

Ocular parasitic infections are a common cause of morbidity worldwide, however they remain an uncommon and fascinating presentation in the UK. We present the case of a 79-year old woman, who attended A&E, with a four-day history of left eye irritation and redness due to what she thought was a cyst in her eye. She was assessed by the Ophthalmologists, who noted a large motile sub-conjunctival worm in her left eye with surrounding congestion. The patient underwent successful removal of the intact worm under local anaesthetic. She was referred to the Infectious Disease team for ongoing management.

The nematode was sent to the Parasitology Laboratory at the London School of Hygiene and Tropical Medicine and identified as Dirofilaria repens.

Dirofilaria are zoonotic infections and are considered an emerging infection in mainland Europe, however UK cases remain confined to people with a travel history. Advice was sought as to whether any imaging was required to exclude pulmonary nodules or other visceral involvement, which have both been reported in the literature. However, given her clinical picture, further imaging was considered unnecessary and excision of the adult worm curative.

231: An evaluation of Temocillin use and clinical outcome for Enterobacterales bloodstream infections: a multi-centre retrospective analysis

Dr Laura Cottom[1], Dr Raje Dhillon[1], Dr Jenna Gillies[1], Dr Fiona Thorburn[1], Dr Linda Bagrade[1]
[1]*Department of Clinical Microbiology, Glasgow Royal Infirmary, Glasgow, United Kingdom*

Background

Gram-negative septicaemia remains an important therapeutic challenge. The ever-increasing prevalence of multidrug-resistant Gram-negative bacteria continues to be a global threat. In Scotland, the rate of E.coli bacteraemia cases is 87.7/100,000 population (2015-2019). Temocillin is an attractive carbapenem 'sparing' agent for Enterobacterales bloodstream infections. In 2020, EUCAST published an update reclassifying the temocillin MIC breakpoint for susceptible isolates as <0.001 mg/L (0.001–16 mg/L being defined as 'susceptible, increased exposure' necessitating a dose of 6g/day). Previously a dose of 4g/day, based on BSAC guidance and a breakpoint of <8mg/L had been advised for invasive infections.

Aims

This study aims to evaluate the utility of Temocillin in the treatment of Enterobacterales bloodstream infection and assess clinical outcome.

Methods

A retrospective multi-centre analysis was performed over 6-months (September 2018 to February 2019). Cases of Enterobacterales bacteraemia, in patients who were actively treated, were included for analysis. The source of infection and management were reviewed for each case. Recurrence of infection, 30-day, 90-day and all-cause mortality rates were determined.

Results

468 patients were identified. Of these patients 42% were identified in the first month as receiving Temocillin as targeted therapy at the 4g/day dosing. 60% of isolates were identified as E.coli. <3% tested Temocillin resistant based on the previous BSAC breakpoint.

No statistically significant difference in mortality was found comparing Temocillin to another targeted agent. No cases of recrudescence of infection were identified.

Conclusion

Our study provides a valuable evaluation of the utility of Temocillin as an effective treatment option for Enterobacterales bloodstream infections.

232: What is the potential impact of healthcare charging policies in the NHS on TB treatment and care despite exemptions for infectious diseases?

Dr Johanna Kellett Wright[1], Dr Rajeka Lazarus[2], Dr Ealish Swift[3]

[1]University Hospitals Bristol NHS Trust, Bristol, United Kingdom, [2]University Hospitals Bristol NHS Trust, Bristol, United Kingdom, [3]University Hospitals Bristol NHS Trust, Bristol, United Kingdom

Background:

The 2014 Immigration Act introduced changes to charging for overseas visitors needing NHS care. Case studies suggest that NHS trusts are using the MESH system to send automated letters to patients requesting them to demonstrate their entitlement to care. It is unclear how accurate this process is. Testing and treatment for infectious diseases, such as tuberculosis, are exempt from charging however there is concern that some patients may still be asked to prove entitlement. Case studies have shown that charging acts as a deterrent to accessing care with fatal consequences and public health concerns. The aim of this study was to establish what percentage of patients attending TB clinic received requests to prove entitlement to care, which may impact on attendance.

Methods:

The medical records of patients attending TB clinic in two large teaching hospitals over a 22 month period were retrospectively reviewed to identify letters that had been sent to prove entitlement.

Results:

157 records of patients who attended between 03/01/2019 to 31/10/2020 were reviewed. In total 10 patients (6%) were sent letters requesting proof of entitlement, including one letter sent whilst the patient was admitted to intensive care. Eight of these individuals were sent further charging letters, bills or Home Office correspondence.

Conclusion:

This demonstrates that patients who should be exempt from charges are sent letters using current processes. Receiving these letters can deter patients from accessing healthcare due to fear of charging or immigration enforcement, leading to negative health consequences. Current processes must be urgently reviewed.

233: Recurrent Mycobacterium avium Infection in AIDS

Dr Mohammad viquaruddin Hamza[1]

[1]UHL , Leicester , United Kingdom

Recurrent Mycobacterium avium Infection in AIDS

67 year old man, he was diagnosed with HIV in 1996. He had been on combivir/efavirenz till 2010. Later he was switched to emtrecitabine/tenofovir and boosted lopinavir. He stopped treatment with out any reason in 2014. He came to us in end of 2016 where his viral load was 49114copies/ml and CD4 count was 10. He was having fever, night sweat and cough also. Blood Culture and sputum culture both grew Mycobacterium avium. He was started on abacavir/dolutegravir/lamivudine and he was started on Rifabutin, ethambutol, clarithromycin and levofloxacin. His follow up culture after two months showed clearance of mycobacterium and his HIV viral load was undetectable but his CD4 count did not recover. It was 40 after 6 month of treatment. He continued 4 drug regimen for 2 years and later he was switched to azithromycin 1.2 gm once daily. He had been on azithromycin for 4 years. But CD4 did not rise above 100. After 4 years of treatment, his CD4 count was at 90 and it was highest for him ever . Patient wanted to stop azithromycin. Azithromycin was stopped. After 6 month of stopping azithromycin, he started developing lethargy and back pain. CT scan initially was done it ruled out any lymphadenopathy but showed L1-L2 discitis. Biopsy under IR guidance was done and it showed mycobacterium avium by whole genome sequencing. Blood culture did not grew anything. He has been started on rifabutin, clarithromycin, ethambutol and iv amikacin.

235: A case of concurrent bacterial meningitis and COVID-19 infection

Dr David Hettle[1], **Dr David Johnstone[1]**, Dr Ed Moran[1]
[1]*Department of Infectious Diseases, Southmead Hospital, Bristol, UK*

Case: A 19-year-old man presented to hospital with confusion, following headache and fever for five days. He was SARS-CoV-2 RNA positive on a nasopharyngeal swab four days prior to admission. He is normally fit and well and works as a warehouse manager. He has no unusual hobbies, although does have a pet lizard. He had not yet been vaccinated against COVID-19.

He was tachycardic and febrile (38.7°C), but otherwise cardiovascular, respiratory, and abdominal examination were unremarkable. He had no rash. He had mild neck stiffness, photophobia and was intermittently confused for 24 hours with no additional neurological signs. A chest X-ray was clear, and CT Head was unremarkable. CSF analysis revealed a high white cell count (522/mm^3), predominantly neutrophilic (68%), with a high protein (1.72g/l), so he was treated as likely bacterial meningitis with Ceftriaxone and Dexamethasone. No pathogens were detected on CSF culture, 16s or viral PCR, including for SARS-CoV-2 RNA. Meningococcal and pneumococcal blood PCR were negative. The patient improved quickly and was discharged having completed 10 days of Ceftriaxone, remaining well two weeks post-discharge.

Discussion: This case is one of few described of concurrent bacterial meningitis and COVID-19 infection. While there are reports of COVID-19-associated CNS infections, CSF analysis in such cases often reveals a lymphocyte-predominant pleocytosis and/or positive SARS-CoV-2 RNA.

The clinical picture of bacterial meningitis here, coupled with previously described cases of similar co-infection, raises the possibility that even mild nasopharyngeal infection with SARS-CoV-2 may predispose particularly young adults to invasive CNS infection.

236: Fatal Vasculitis following ChAdOx1 nCoV-19 (AstraZeneca) Vaccination

Dr Muhammad Fahad[1], Dr Daniel Pan[1,2], Dr George Hills[1,3], Dr Christopher Martin[1,3], Dr Jeremy Royle[4], Dr Kehinde Sunmboye[4], Dr Rebecca Harrison[5], Miss Sarah Hackney[6], Dr Christopher Holmes[3], Prof. Martin Wiselka[1,2]

[1]Department of Infectious Diseases and HIV Medicine, University Hospitals of Leicester NHS Trust, Leicester, United Kingdom, [2]Department of Respiratory Sciences, University of Leicester NHS Trust, Leicester, United Kingdom, [3]Department of Microbiology, University Hospitals of Leicester NHS Trust, Leciester, United Kingdom, [4]Department of Rheumatology, University Hospitals of Leicester NHS Trust, Leciester, United Kingdom, [5]Department of Pathology, University Hospitals of Leicester NHS Trust, Leciester, United Kingdom, [6]Department of Pharmacy, University Hospitals of Leicester NHS Trust, Leicester, United Kingdom

A healthy man aged 73, presented with headache, cough, chest pain and breathlessness. His first dose of AZ vaccine was 9 days ago.

O/E he was febrile and had crepitations in chest. Bloods revealed raised inflammatory markers, D-dimer and lymphopenia, CTAP showed left basal atelectasis. Treatment for Pneumonia with IV Co-Amox started. Negative SARS-CoV-2 testing on four occasions.

Then he developed AKI, worsening headache and confusion but had normal CT Head and CSF apart from mildly elevated protein. Examination revealed splinters, nail fold infarcts, purpuric rash and livedo rash. Antibodies to SARS- CoV-2 were positive with spike protein only (nucleocapsid negative), consistent with vaccination and no evidence of previous SARS-CoV-2 infection. A diagnosis of systemic vasculitis secondary to COVID-19 vaccine was made and dexamethasone and tocilizumab were commenced. Unfortunately, on day 10 the patient went into cardiac arrest and died.

PM examination confirmed the presence of necrotising fibrinoid vasculitis affecting arteries and veins of medium to large size.

Necrotising vasculitis following vaccination against SARS-CoV-2 is a life- threatening condition that can occur in all individuals. The current Summary of Product Characteristics for ChAdOx1 nCoV-19 does not list vasculitis as an adverse effect but some reports of associated vasculitis have been received by pharmacovigilance databases. Clinicians should have a low threshold to suspect this diagnosis in patients presenting to hospital with evidence of an auto- inflammatory syndrome following vaccination. Combined antibodies to both spike and nucelocapsid SARS-CoV-2 proteins can help to differentiate between COVID-19 infection and vaccination, especially in younger persons.

237: Racial and ethnic minority inclusion in Covid-19 Vaccine trials

Dr Suhail Aslam[1], Dr Anna Goodman[1]

[1]*Clinical Research Facility, Guys And St Thomas' NHS Trust, London, UK*

Background

Since the emergence of Covid-19 in December 2019 numerous vaccines have been developed and rolled out. A lack of representation in clinical trials has been suggested as a reason for vaccine hesitancy. Given Covid-19 has disproportionately impacted ethnic minority groups, understanding the reasons for this and ensuring high uptake are important.

Methods

Demographic data on race/ethnicity were collected from published clinical trial data for vaccines currently approved for use or undergoing rolling review in the UK or by the European Medicines Agency. Data is reported using the aggregated main ethnic group categories as per the Office for National Statistics.

Results

The ChAdOx1 (Oxford/Astrazeneca), NVX-CoV2373 (Novavax), BNT162b2 (Pfizer/BioNTech), mRNA-1273 (Moderna), Ad26.COV2.S (Janssen) and rAd26 & rAd5 (Sputnik V) were included in this analysis. Overall, 78.1% of participants were White, 9.9% Black, 3.6% Asian, 3.2% Mixed, 3.6% other and 1.3% did not report an ethnicity (n = 157,490). In these trials 17.3%, 6.3%, 17.1%, 20.8%, 41.3% and 1.5% of participants respectively were from Ethnic minorities (excluding White minorities). Of study arms conducted in the UK – Oxford/AstraZeneca and Novavax - these had 8.6% and 6.3% of participants respectively from Ethnic minority groups (excluding White minorities) compared to 12.2% for the UK population.

Conclusion

A majority of participants in clinical trials for major Covid vaccines are White. Ethnic minority groups are under-represented in most trials including those conducted in the UK. Further, we noted ethnicity data is poorly recorded locally and in NHS data - improving this may help facilitate better recruitment.

238: An audit reviewing the use of Dalbavancin over an 18-month period

Miss Zara Tariq[1], Mrs Kelly Atack

[1]*Leeds Teaching Hospitals Nhs Trust, Leeds , England*

Background:

Dalbavancin is a glycopeptide that is used to treat gram-positive infections. It can be administered as a single dose, providing two weeks of effective treatment or a weekly dose for two weeks providing up to eight weeks of effective treatment. There is a reduced risk of line infections as the doses can be administered via a cannula and treatment is more likely to be efficacious as daily adherence and nurse administration is not required. Dalbavancin has been a vital antimicrobial in reducing the risk of COVID transmission for inpatients and outpatients during the pandemic, by minimising their inpatient length of stay and preventing hospital admission. The outpatient parenteral antimicrobial team (OPAT) have facilitated this administration.

Aims and objectives: The audit aims to review the occurrence of adverse effects, readmissions post treatment and bed days saved with Dalbavancin over an 18-month period.

Results: 30 adult patients received treatment during this time period. 0% of patients reported adverse reactions, 6% of patients were re-admitted due to recurrence of infection within 60 days. 20% of patients were readmitted due to other causes. 26% of patients were supported by OPAT at discharge and the same percentage were patients who inject drugs (PWID's) and were discharged earlier as a result. Hundreds of bed days were saved.

Conclusions: Dalbavancin has been essential in minimising patients' COVID risk during the pandemic. More experience is needed with using Dalbavancin in patients with varying baseline renal function. The blood monitoring post administration was not consistent and requires agreement.

239: Blood stream infections (BSI) in tertiary Intensive Care Unit (ICU)- An update!

Mr Veer Patel[1], Dr. Seema Desai[2]

[1]Keele University - School Of Medicine, Newcastle-Under-Lyme, United Kingdom, [2]University Hospital of North Midlands NHS Trust, Stoke-on-Trent, United Kingdom

Patients in ICU represent a small proportion of inpatients; however they account for up to 25% of all hospital acquired infections (HAI) and are 2-5 times more likely to develop a HAI than the average patient. Management of BSI in ICU is a rising problem due to increasing antibiotic resistance posing challenges to antimicrobial stewardship (AMS) leading to higher mortality in ITU patients. It increases duration of inpatient stay, hospital costs and worsens prognosis. Our study aims to find all-cause mortality in patients with BSI admitted to intensive care at 14 and 28 days from admission. We used retrospective patient data from the hospital database between March 2019 to March 2020. We included 113 patients admitted to ICU and had BSI, of which 12.4% died at 14 days and 24.8% died at 28 days with overall mortality of 33.6% at discharge. Respiratory causes of bacteraemia were significantly high, representing 48.1% of all causes. Patients with gram negative BSI had a higher mortality with 14.29% at 14 days when compared to gram positive BSI, but 28 day mortality was similar in both groups (25.71% and 25%, respectively) which is concerning. This study concludes that patients admitted to ICU have higher mortality at 28 days irrespective of the pathogen isolated in the blood stream. This could possibly be explained due to prolong stay in ICU leading to increase burden from HAI. Future AMS will have to focus on a prevention model for this cohort to improve patient outcome.

240: Procalcitonin as an antimicrobial stewardship tool in the COVID-19 era a single centre experience

Marta Trzos-Grzybowksa, Roisin Connolly, Alida, Fe Talento, **Margaret Creedon**, Aine Egan, Tidi Hassan

Background

Procalcitonin (PCT) is a biomarker which may have greater specificity than other pro-inflammatory markers in identifying bacterial infection, and may aid in antimicrobial stewardship in COVID-19 patients.

Methods

A PCT assay by Abbott diagnostics was introduced in our hospital in November 2020. Over a 12-week period, we prospectively recorded all PCT results on in-patients with COVID-19 admitted to the intensive care unit (ICU), as well as stewardship actions taken following discussion with the ICU physicians. Microbiology records were reviewed to ascertain whether bacterial infection was subsequently confirmed.

Results

Sixty-four PCT results were recorded on 27 patients.

Result Interpretation No. of samples

<0.05 ng/mL Absence of bacterial infection 4

≥0.05 ng/mL and <0.5 ng/mL Systemic bacterial infection is not likely 41

≥0.5 ng/mL and <2 ng/mL Systemic bacterial infection is possible 12

≥2 ng/mL and <10 ng/mL Systemic bacterial infection is likely 5

≥10 ng/mL Systemic bacterial is highly likely 2

Antimicrobials were discontinued on 12 occasions, and withheld on 16 occasions where PCT was <0.5 ng/mL. No cases of confirmed bacterial infection were diagnosed in patients with PCT concentrations of <0.05 µg/L; however definite bacterial infection was confirmed in 2 patients (1 case of staph aureus bloodstream infection; 1 case of staph epidermidis CVC infection), and bacterial infection was designated probable in 5 patients with PCT ≥0.05 ng/mL and <0.5 ng/mL.

Conclusions

PCT may be a useful tool in enabling antimicrobial stewardship actions in patients with severe COVID-19, but results need to be interpreted within the clinical context.