Engaging Microbiology in Wound Care

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- The opinions expressed in this presentations are those of my own. They do not purport to reflect the opinions or views of my employers,

Overview

- Swab vs Biopsy
- “Normal Skin Flora” – what does that mean?

Swab vs Biopsy

- What is wound infection? This defines the gold standard.
- Is a swab a good enough surrogate?

Swab vs Biopsy

- Very few head-to-head studies:
  - "Wound swab biopsy" on Pubmed: only 251 results!
  - "Wound biopsy swab" on Pubmed: 441 results
  - "Swab Biopsy" on Pubmed: 3456 hits, and lots of irrelevant ones to wound infection
- Many different types of wounds
- Small study size
- Old swab types
- Culture vs molecular methods
- Conflicting results
- Extrapolation problem

Swab vs Biopsy selected literature

- Rondas et al 2013 review: Levine swab technique recommended, though best sampling technique still unknown.
- Demetriou et al 2013: Diabetic foot infection: Good sensitivity and NPV
- Nelson et al 2017: Diabetic foot infection: Tissue better, tissue reported more pathogens c.f. wound swab in 36.7%, while swab reported more pathogens in 8.1%
- Senneville et al 2023 review: Tissue better for Diabetic Foot Ulcer
- Haalboom et al 2018: Levine Swab identified all organisms cultured from biopsies in 72.8%
- Huang et al 2016: Swabs – Biopsy correlation depends on wound grade. At beyond grade 3 poor correlation. Also less correlation for Gram negatives.

"Normal Skin Flora"
How are specimens processed in the lab?

- Different set up for different specimens
  - To support fastidious organisms
  - To suppress fast growing mixed organisms
- If no clinical notes, "routine" set up
- More information on request slip, better tailored set up
  - Location!!
  - What is it?
  - Brief history
- Tissues usually get more media set up than swabs

History Examples	Actions in lab
Breast	Add special lipophilic plate, chase Corynebacterium
Diabetes + Trauma + Tissue	Special care for specimen to look for Zygomycetes (less cutting) – need microbiologist consult
Post op wound + Tissue	Anaerobic culture
Pilonidal/Perianal/other dirty sites	Special plates to suppress overgrowth

"Normal Skin Flora"
How are results released in laboratory?

- Specimen cultures are viewed by bench scientists.
- Colonies of interest (based on colony morphology etc) have confirmatory identification (which requires additional tests).
- Not all colonies have confirmatory identification.
- If scientists have issues, clinical microbiologists are consulted.
- Results are authorized by microbiologists for release, but depending on the laboratory, not all results are viewed by clinical microbiologists.

- Many human factors involved, thus variability.

- "Normal skin flora" – what is it??

Summary:
Thinking about Microbiology

- The Art and Science of Growing little things on little plates.
- Wound microbiology is severely under researched.
- Colonization and Infection may not be clear cut.
- Engage your microbiology service for best results:
  - Request slip as referrals
  - Call the laboratory for difficult cases prior to sending specimens
  - Talk to the Clinical microbiologists for more information/interpretation
  - "Normal skin flora"? Confirm if it doubt.
  - Further specimens

References

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