

Consider a wide differential diagnosis of mastoiditis in Immunocompromised patients: A rare case of Nocardia Mastoiditis.

Mthabisi Moyo ¹ Warren Paul Kuhn ²

¹ Registrar Otorhinolaryngology EtheKwini Metropolitan Complex University of Kwa-Zulu Natal, South Africa

² Consultant Otorhinolaryngology and Head of Department Otorhinolaryngology Inkosi Albert Luthuli

Central Hospital, Durban South Africa.



Introduction.

Nocardia is a Gram-positive bacterium which belongs to the Actinomycetia class and Mycobacteriales order. It is an acid-fast bacillus that is found in the environment, typically in standing water, decaying plants and soil.

Nocardia may cause a rare infectious disorder referred to as Nocardiosis. Inoculation mostly occurs through direct contact with broken skin but may become airborne and be inhaled with spread to involve any organ. Nocardiosis occurs mainly in immunocompromised patients.

Nocardia mastoiditis is a relatively rare clinical entity with only a few cases reported in the literature. A limited search on Google scholar using key words “*Nocardia* Mastoiditis” identified only seven cases.



Figure 1: *Nocardia* sub species

Case Report:

A 34-year-old female presented with a 6 months history of bilateral chronic otitis media and a 2 months history of left neck swelling with an associated draining neck sinus. Previous treatment with topical Ciprofloxacin eardrops had provided limited short-term improvement in her otorrhea.

Despite anti-retroviral therapy she had a low CD4 count of 20, and a high HIV Viral Load of 7745. She also had clinical features of severe wasting and anaemia, all in keeping with stage 4 disease and failed virologic control.

In addition, she was on her sixth month of anti Tuberculosis (TB) treatment in response to a positive TB lateral flow urine lipoaribomannan assay (TB LAM). Of note was that other initial TB work-up had been negative.

Computed Tomography scan (CT) imaging confirmed a left complicated mastoiditis with an abscess in the left upper lateral neck and small epidural collection. The epidural abscess was assessed by the neurosurgeons who recommended ongoing antimicrobial treatment with serial CT monitoring.

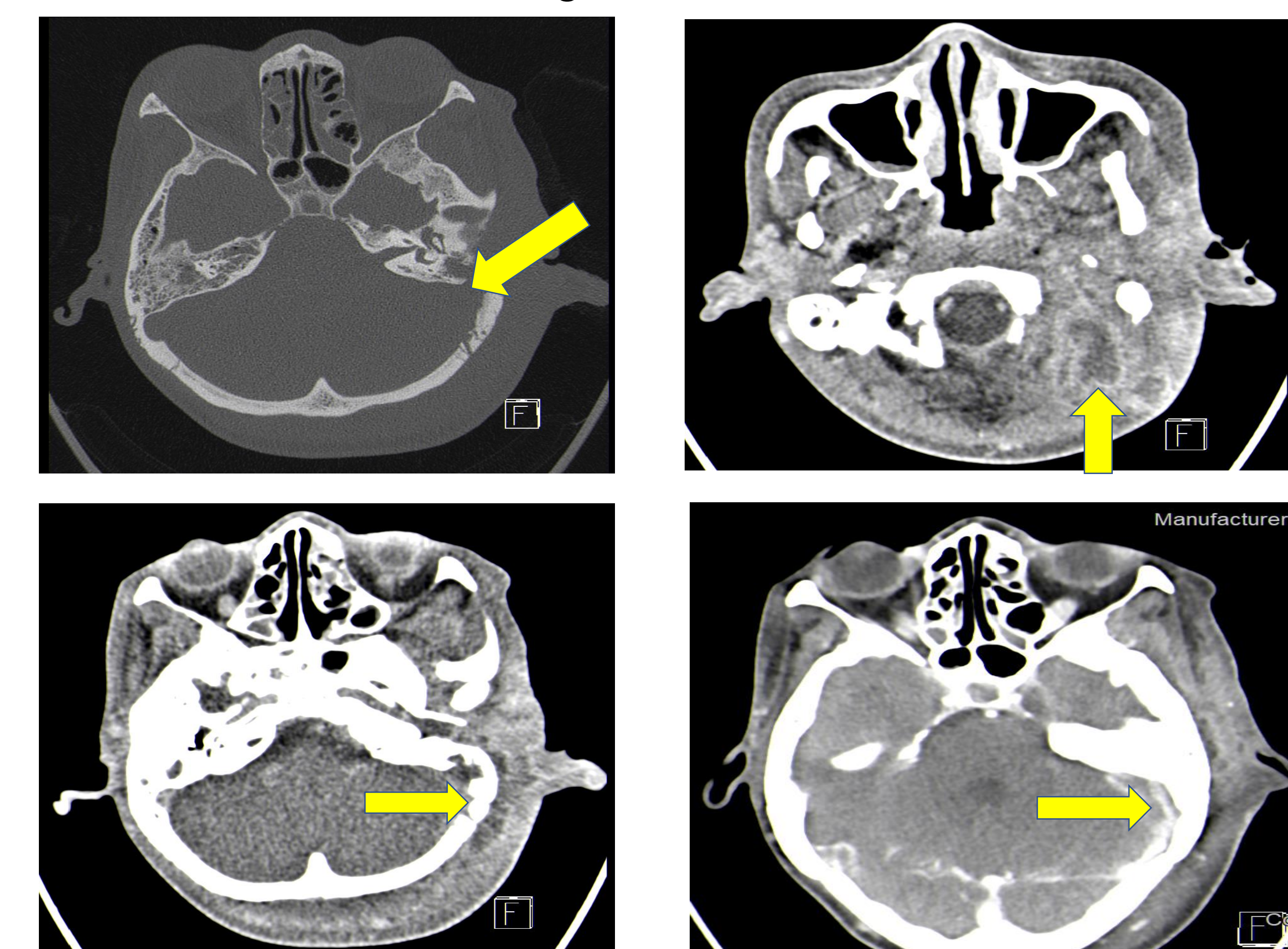


Figure 2: Pre-operative CT scan images

An exploratory mastoidectomy with incision and drainage of the neck abscess, and debridement of the chronic sinus was undertaken. Multiple specimens were sent for histological and microbiological investigation including TB and fungal testing. Microbiological culture confirmed the presence of a *Nocardia* subspecies with histology confirming an abscess wall.

Based on Infectious Disease Consultation, she was initially managed with intravenous Ceftriaxone to cover any intracranial sepsis and later changed to longer term oral Cotrimoxazole. Concern was also raised about the previous TB diagnosis based on the TB LAM test, especially in the absence of any other supporting results. As *Nocardia* are acid fast and contain similar glycolipid cell walls they may cross react with the TB LAM test creating a false positive result.

The patient responded well to treatment. CT done five days after operation showed a resolving epidural abscess. She was discharged home on day fourteen after operation on ongoing cotrimoxazole and referred to base for optimization of her anti-retroviral therapy. On follow up, two months later, the patient showed clinical resolution of the chronic skin sinus and chronic otitis media.



Figure 3: Pre-operative clinical image

Conclusion.

We present this case with hope of increasing awareness of *Nocardia* as a possible pathogen in immunocompromised patients, particularly in our South African setting with high prevalence of HIV. In immunocompromised patients' microbiological culture and identification is mandatory to guide treatment.

A diagnosis of disseminated TB based solely on a TB Lam assay should be guarded, and the patient monitored closely for clinical improvement. If no clinical improvement is seen, an alternative diagnosis or resistance should be considered.

References.

1. Subha ST, Raman R. *Nocardia* infection of the mastoid in an immunocompromised patient. *Med J Malaysia*. 2004 Dec;59(5):688-9. PMID: 15889577.
2. Marsh S, Ratnaraj F, Norris R, Gass J, Vivekanandan R. *Nocardia* Mastoiditis in an Immunocompromised Patient. *J Infect Dis Epidemiol*. 2017;3:033.
3. Lawler M, Archary M, Smith M, Bobat R. *Nocardia* mastoiditis in an African child. *Southern African Journal of Infectious Diseases*. 2014 Jan 1;29(4):151-3.

Acknowledgements

Nocardia image obtained from the internet

<https://www.shutterstock.co/search/nocardia>

