



Maxillary Sinusitis and Ethmoidal Polypi due to Nocardia: A Rare Case

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Abstract

Introduction: Nocardia are environmental saprophytes which cause pulmonary, CNS or disseminated skin and soft tissue infection in immunocompromised individuals. Few articles have reported Nocardial sinusitis. There is no report of polypi associated with Nocardial sinusitis. We report a case of Nocardial sinusitis with ethmoidal polypi in immunocompetent lady.

Case Report: A 55 year lady presented to our hospital with right nasal obstruction and foul smelling nasal discharge since 3 years. On examination, she had mucopurulent nasal discharge and multiple ethmoidal polypi (right side). CT scan showed right sided maxillary sinusitis and ethmoidal polypi. She had eosinophilia. She underwent endoscopic sinus surgery. Histopathology showed inflammatory polyp and gram positive branching filamentous acid fast bacteria. Culture showed white, dry, granular colonies. Biochemical tests confirmed Nocardia braziliensis. Patient was treated with trimethoprim+sulphamethoxazole for 6 weeks. She is disease free 4 months after treatment.

Discussion: Nocardia are saprophytes causing infection in immunocompromised individuals. Reports of Nocardial sinusitis are rare. Our patient was immunocompetent with no history of trauma and had ethmoidal polypi and eosinophilia along with unilateral Nocardial sinusitis. Literature shows no other report with similar findings. Culture and biochemical test confirmed Nocardia braziliensis and patient responded well to endoscopic sinus surgery followed by trimethoprim + sulphamethoxazole for 6 weeks.

Keywords: Nocardia; Maxillary and ethmoidal sinusitis; Ethmoidal polypi

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Introduction

Nocardia are aerobic saprophytes present in soil, fresh and salt water [1]. They have been found to cause opportunistic infections in immuno-compromised individuals resulting in pulmonary, skin and systemic infections. Very few cases of sinusitis and Central nervous system infections caused by these organisms have been reported in literature [2,3]. No case of ethmoidal polypi associated with Nocardia sinusitis has been reported on PubMed search so far.

We report a 55 year old female immunocompetent patient with unilateral maxillary and ethmoidal sinusitis with polypi (unilateral). She had no history of trauma. She was treated by endoscopic sinus surgery followed by trimethoprim + sulphamethoxazole. The patient recovered and is disease free 4 months following completion of treatment.

Case Presentation

A 55 year old lady presented to our Outpatient department with history of right sided nasal obstruction and foul smelling nasal discharge of 3 years duration. She was an agriculturist. She had no history of fever, trauma or use of steroids (intranasal or systemic). Diagnostic nasal endoscopy revealed mucopurulent foul smelling discharge and multiple polypi in middle meatus.

CT scan of paranasal sinuses showed soft tissue density filling right maxillary and ethmoidal sinuses, completely blocking the right osteo-meatal complex. There was no bone erosion (Figure 1).

The total WBC count was normal. However, absolute eosinophil count was raised to 1200 cells/cu mm of blood.

Patient underwent Endoscopic Sinus Surgery and was found to have purulent foul smelling secretions in right maxillary antrum and ethmoids and multiple polypi in right ethmoidal air cells;



Figure 1: CT scan Paranasal Sinus (coronal view).

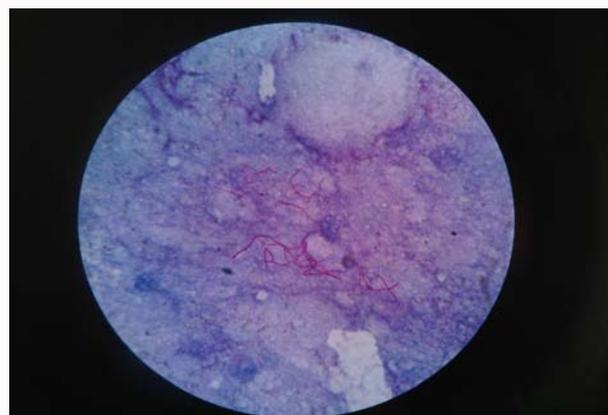


Figure 3: Gram stain showing gram positive branching filamentous bacteria.

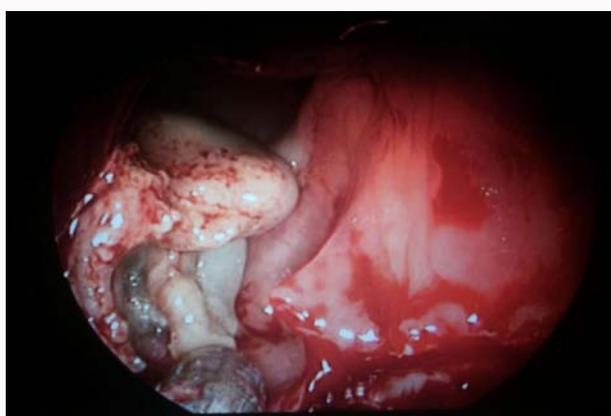


Figure 2: Intra-operative endoscopic view of fungal debris.

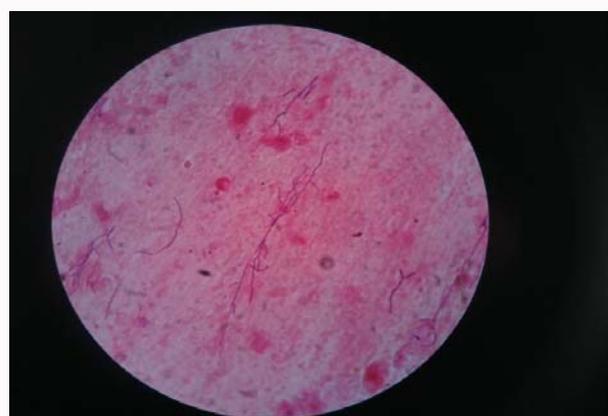


Figure 4: Modified Zeihl Neelsens stain- showing filamentous acid fast structures suggestive of Nocardia species.

filling up the right middle meatus.

Subsequent histopathology report suggested inflammatory polyp with filamentous organisms (Figure 2).

Gram staining showed gram positive branching filamentous bacteria and modified Ziehl Neelson staining showed filamentous acid fast structures suggestive of Nocardia species. Culture of the mucopurulent secretions showed white, dry, wrinkled, granular colonies. Further biochemical tests revealed that it produced urease, utilized citrate, hydrolysed esculin, reduced nitrate to nitrite and did not grow at 45°C which was suggestive of *Nocardia braziliensis* (Figure 3 and 4).

Patient was initially started on amoxicillin and potassium clavulinate and later following culture sensitivity report she was administered trimethoprim+ sulphamethoxazole for a period of 2 weeks. Patient was discharged on request 2 weeks following surgery and advised to continue oral trimethoprim+ sulphamethoxazole for another 4 weeks at home. She was followed up for a period of 4 months after treatment and was assessed endoscopically on subsequent visits. Till date patient is asymptomatic and nasal endoscopy on outpatient basis did not show any recurrence.

Discussion

Nocardia species are environmental saprophytes, living in soil, organic matter and water. They are known to cause disease in immunocompromised patients which can be pulmonary infection, CNS infection, skin or soft tissue abscess and sometimes disseminated

disease [2,3]. However literature shows few case reports of *Nocardia* infections in immunocompetent patients [4]. Occasional cases of Paranasal sinus infection by *Nocardia* have been reported. Our patient was also an immunocompetent lady with unilateral sinusitis and ethmoidal polypi. She was not a diabetic and had not used steroids. Inhalation could have been the most probable mode of infection in our patient. As she had unilateral involvement of Paranasal sinuses and was an agriculturist, a possibility of infection by nose picking must be considered. To our knowledge in Pub-Med search only 4 reports of sinusitis due to *Nocardia* in immunocompetent individuals were found [2,5,6]. None of these reports had patients presenting with ethmoidal polypi. We also observed that all published reports of *Nocardia* sinusitis were from tropical or subtropical regions as in our case.

The species identification of *Nocardia* can be done biochemically and by molecular techniques [7,8]. The availability of newer molecular methods such as 16S ribosomal RNA sequencing, hsp65 PCR and 16S restriction enzyme analysis (PRA) appears to be an improvement and recognizes >90% of currently recognized clinical species [7,8]. As our institute is a rural tertiary care centre, it wasn't possible for us to perform molecular identification of *Nocardia* species. However biochemical test performed was suggestive of *Nocardia braziliensis*. Trimethoprim + sulphamethoxazole are the treatment of choice for *Nocardia* infections. All the earlier described cases of sinusitis caused by *Nocardia* responded well to Trimethoprim+ sulphamethoxazole except in a case reported by Unzaga MJ et al where patient could not

tolerate it and was given a 6-week course of erythromycin [5]. Our patient responded well to Trimethoprim + sulphamethoxazole and had no recurrence after 4 months of follow-up. There is no other case report showing unilateral ethmoidal polypi associated with nocardia sinusitis. As our patient had unilateral ethmoidal polypi and raised eosinophil count, a possibility of allergic response to Nocardial infection cannot be ruled out.

Conclusion

Nocardia should be considered as an etiological agent for chronic sinusitis in immunocompromised as well as immunocompetent individuals in tropical climate, particularly among agriculturists. It demands special attention and expertise on part of the microbiologist because of its slow growing nature and difficulty in identifying it.

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