

Trichosporon inkin, an unusual agent of fungal sinusitis: A report from south India

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~ Abstract

The aetiology of fungal sinusitis is diverse and changing. *Aspergillus* species has been the most common cause for fungal sinusitis, especially in dry and hot regions like India. *Trichosporon* species as a cause for fungal sinusitis has been very rarely reported the world over. Here, we report a rare case of allergic fungal sinusitis caused by *Trichosporon inkin* in a 28-year-old immunocompetent woman. Bilateral nasal obstruction, nasal discharge and loss of smell were her presenting complaints. Diagnostic nasal endoscopy showed bilateral multiple polyps. Functional endoscopic sinus surgery was performed and many polyps were removed. Based on mycological and histopathological studies, the pathogen was identified as *T. inkin*.

Keywords: Fungal sinusitis, polyps, *Trichosporon*

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~ Introduction

Fungi are being increasingly implicated in the aetiopathology of rhinosinusitis. Though fungal sinusitis is frequently seen in diabetic or immunocompromised patients, it has also been reported in immunocompetent individuals. Many fungi have been implicated with fungal sinusitis, including the *Aspergillus* species, several of the dematiaceous fungi including *Curvularia*, *Bipolaris*, *Exserohilum* and also

zygomycetes. *Aspergillus* spp are more commonly isolated from the Indian subcontinent. [1] The diversity of fungal pathogens causing sinusitis is on the rise. [2],[3] To the best of our knowledge, this is the first report of allergic fungal sinusitis with polyposis caused by *Trichosporon inkin* from India.

~ Case Report

A 28-year-old woman from Chennai, South India, presented with bilateral nasal obstruction, nasal discharge and loss of smell for a period of 6 months. She was not a known diabetic and was not on steroid treatment. She was HIV seronegative. Routine ENT examination and diagnostic nasal endoscopy revealed multiple pale polyps over the middle turbinate in both the nasal cavities. It was possible to probe all around the polyps and they did not bleed to touch. Mucopurulent discharge was noted from both nasal cavities. Nasal septum was central, and middle as well as inferior turbinates appeared normal.

Functional endoscopic sinus surgery (FESS) was performed. Uncinectomy, middle meatal antrostomy and sphenoidectomy were done on the left nasal cavity. The polyps were removed from anterior and posterior ethmoidal sinuses as well as sphenoid sinus. The same procedure was performed on the right side as well. The material was sent for microbiological and histopathological study.

Direct microscopic examination of the specimen by 10% potassium hydroxide (KOH) mount [Figure 1] and lactophenol cotton blue (LPCB) mount showed multiple hyaline septate branching hyphae. Histopathological examination of the specimen showed hyaline septate acutely branching hyphae and allergic mucin [Figure 2].

Figure 1: KOH (10%) preparation of the specimen showing hyaline septate branching hyphae (×400)

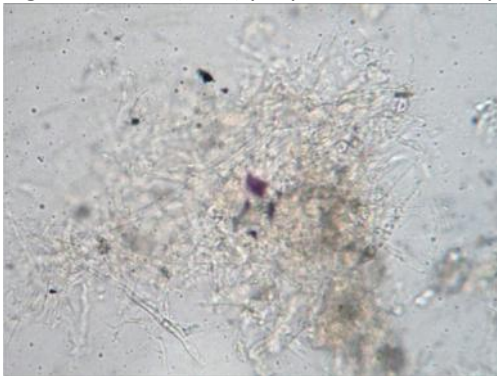
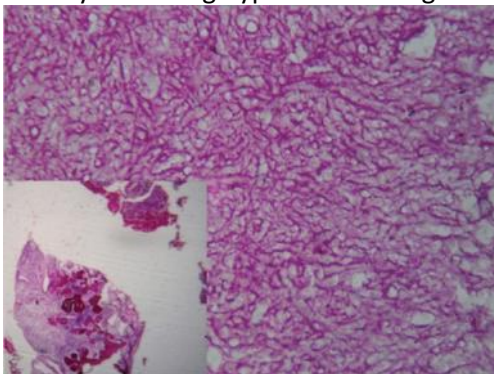


Figure 2: Histopathological sections of polyp in Periodic Acid Schiff (PAS) stain (×400) showing septate, acutely branching hyphae and allergic mucin (inset)

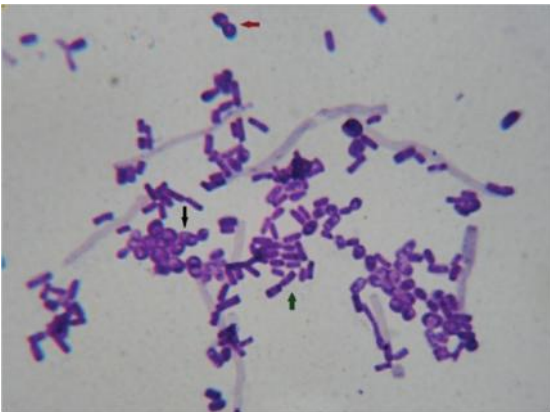


The specimen was inoculated onto two sets of Sabouraud's Dextrose Agar (SDA) slopes and incubated at 25°C and 37°C. White pasty colonies appeared on all the media (at 25°C and 37°C) on the second day of incubation, and over the next 3-4 days white to tan, soft pasty colonies with fine cerebriform folds were formed [Figure 3]. Cracking of the media was observed around the colonies. Microscopic examination of the isolate by 10% KOH, LPCB and Gram stain [Figure 4] preparations revealed yeast-like cells with blastoconidia, hyaline septate hyphae and numerous arthroconidia. The arthroconidia were rectangular initially and later became more spherical. The isolate was urease positive. Sarcinae (swollen, meristematic clump of cells), [4] which are characteristic morphological features of *Trichosporon inkin*, were demonstrated in Gram-stained smears [Figure 4]. Based on the macroscopic and microscopic findings, the organism was identified as a *T. inkin*.

Figure 3: Colony morphology on SDA showing white pasty colony with fine cerebriform folds. Cracking of the agar is also seen



Figure 4: Gram staining morphology of the isolate ($\times 1000$) showing yeast-like cells with blastoconidia (red arrow), many arthroconidia (green arrow), hyphae and sarcinae (black arrow) that are characteristic of *T. inkin*



Correlating all the clinical, microbiological and histopathological information, the final diagnosis was made as allergic fungal sinusitis with multiple polyposis caused by *T. inkin*. The patient was started on treatment with a tapering course for 20 days of oral prednisolone with a starting dose of 10 mg thrice a day. Unfortunately, the patient was lost to follow-up.

~ Discussion

Trichosporon species are yeast-like fungi, widely distributed in nature and commonly isolated from soil and other environmental sources, which have been involved in a variety of opportunistic infections and have been recognised as emerging fungal pathogens in immunocompromised hosts. Therefore, recovery of *Trichosporon* species capable of growing at 37°C, especially from immunocompromised patients, should be

regarded as significant. [5] Currently, the genus *Trichosporon* includes the following species as potential human pathogens: *Trichosporon cutaneum*, *Trichosporon asahii*, *Trichosporon asteroides*, *Trichosporon mucoides*, *T. inkin*, etc. There is a consensus that molecular methods are required for accurate identification of this genus, but they are still costly and not suitable for most laboratories. [6]

Although uncommon, pathogenic species of this genus are being increasingly reported, in patients with malignant diseases, bone marrow transplant recipient, solid organ transplant recipient and patients with HIV infection [5] *Trichosporon* species have been reported to be the most common cause of non-*Candida* yeast infections in patients with haematological malignancies, and the infections were associated with high mortality rates despite antifungal therapy. [5] No such risk factors were seen in the present case.

T. inkin is frequently isolated from clinical specimens, such as white piedra, and also from patients with peritonitis, endocarditis, lung abscesses, subcutaneous nodules (rheumatoid arthritis patients receiving corticosteroid therapy), sternal surgical wound infections, balanitis, urethral discharge and invasive infections. [5] Three cases of fungal sinusitis caused by *Trichosporon* have been reported from Iran by Hedayati et al. [7]

The incidence of fungal sinusitis varies widely, with higher frequency in geographical areas which have hot and dry climate, as in India. The disease has been described as having four types: Allergic, non-invasive, invasive and fulminate. [8] Allergic type has been described as the most common type of fungal sinusitis in many studies. [1],[9] Except for the fulminant variety, the disease is commonly found in the young immunocompetent population of rural areas. *Aspergillus* species are the commonest aetiological agents, with *Aspergillus flavus* being the commonest species isolated. [1],[8],[10] Allergic fungal sinusitis needs comprehensive treatment with endoscopic sinus surgery, steroids and antifungal therapy. Allergic fungal sinusitis is readily recurrent. Long-term follow-up is important. [11] For effective management, non-invasive disease requires surgical debridement and sinus ventilation only. But for the invasive type, adjuvant medical therapy (antifungals) is recommended to prevent recurrence and further extension. [8] Since there were no signs of invasion in this case, antifungals were not given. This case emphasises the need to have a high index of suspicion and careful microbiological evaluation for fungal pathogens even in immunocompetent individuals with no specific risk factors.

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