Phaeohyphomycosis caused by Rhinocladiella similis mimicking Sporothrix

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Objective: A case of phaeohyphomycosis caused by Rhinocladiella similis with a clinical picture simulating sporothrix is described.

Methods: A 34-year-old male patient, employed in a textile factory, presented with multiple subcutaneous nodules on the lateral aspect of the dorsum of the left hand and left forearm. There was a history of mechanical trauma 1 year back. On examination, three to four verrucous ulcerative nodules clustered on the dorsum of the left hand were observed. A provisional diagnosis of sporothrix was made and a punch biopsy was performed from the lesion and subjected to KOH examination, fungal culture, and histopathological examination. ITS sequencing was done to confirm the identity of the isolate.

Results: The skin punch biopsy from the lesion on the dorsum of the hand showed marked hyperkeratosis, papillomatosis, parakeratosis, acanthosis, and irregular elongation of rete ridges. No fungal structures and neutrophils were seen. On examination with 40% Potassium hydroxide round yeast-like cells were seen. An initial diagnosis of sporothrix was established. After 1 day, when to greyish colonies with aerial hyphae were observed on Sabouraud’s dextrose agar which eventually turned greenish black on further incubation. Lactophenol cotton Blue (LPCB) mount of the slide culture showed thin, hyaline, septate hyphae with oval conidia arranged in a tortile brush pattern around septate conidiophores and also directly arising from the hyphae. The pathogen was confirmed by ITS sequencing as R. similis. Patient was started on itraconazole 200 mg twice daily for 12 weeks. The patient is on regular follow-up and has shown gradual regression of the lesions indicating response to therapy.

Conclusion: Rhinocladiella similis infections have been reported chiefly from Brazil causing chromoblastomycosis. There have been no reports of infections due to this pathogen from the Indian subcontinent. This report presents the first case of R. similis as an agent of phaeohyphomycosis and calls for the need of thorough evaluation of these cases so as to manage cases appropriately. It also underlines the need to study and evaluate the ecological niche of this pathogen as well as its clinical spectrum.

A case of mixed fungal infection causing invasive fungal Rhinosinunis in a post-COVID patient

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Objective: To identify the fungal etiology of invasive nasal sinusitis in a patient of post-COVID.

Methods: A 34-year-old non-diabetic man, who had mild coronavirus disease (COVID) infection 2 months back presented with left-sided nasal obstruction, headache accompanied by malodorous, thick, mucopurulent discharge for the last 2 weeks.

A CT scan of paranasal sinuses revealed opacification of left posterior ethmoid and sphenoid sinuses without bony erosion or calcification.

The patient underwent unilateral endoscopic sinus surgery (FESS) and debulking of tissue from the affected sinuses.

Results: The KOH preparation of the debulked tissue showed thin septate hyphae. Gram-stained smear of the debulked material showed thin septate fungal hyphae with clamp-like connections (Fig. 1). Histopathological examination revealed features of the inflammatory polyp. In Sabouraud’s dextrose agar the fungal colony grew fast and its mycelium is in white and cotton-like. The fungus was phenotypically identified as Schizophyllum communis (identification was confirmed at the National Reference Centre).

The patient continued to do well but about 2 months later he started experiencing headaches and pain behind the eyes. He also complained of nasal stuffiness (left greater than right) and yellowish nasal discharge. At this point, a CT scan revealed soft tissue density with interspersed hyperdensity in sphenoid sinus bilateral ethmoid, and bilateral maxillary sinuses with associated bony erosion and possible extension into the right cavitous sinus and extrachonial compartment of right orbit suggestive of invasive fungal sinusitis (Fig. 2).

Bilateral FESS was done. Extensive fungal material was observed in the sphenoid sinus and thorough debulking was performed.

Mycological studies of the debulked tissue showed this septate hyphae. Schizophyllum communis was again isolated in culture.

Histopathological section showed inflammatory cells and several slender, branching septate fungal hyphae.

The invasive nature of the infection prompted reexamination of the histopathology slides and cultures for the presence of other fungi particularly of the Mucorales group but no other fungus could be identified.

The patient was started on liposomal amphotericin B and the tissue blocks were sent for fungal identification to the National Reference Centre through sequencing following DNA extraction from the paraffin blocks. Amplification of the 18 S rDNA region (coding for the 18S rRNA) using EM primers followed by sequencing revealed the presence of R. arrhizus.
The patient was continued on amphotericin B. The patient was discharged after 2 weeks with oral isuvuconazole. At six months follow-up he is doing well with no evidence of active infection.

Conclusion: As the novel COVID-19 continues to rampage, an abrupt increase in the number of opportunistic fungal infections has been observed.

Invasive and often fatal rhino-cerebral Mucormycosis is now being increasingly reported in patients who have had COVID-19 infection in the recent past. In this case, there was a dual fungal infection causing rhino-sinusitis which was established through conventional culture and PCR assays from paraffinized tissue sections. Increased awareness of the existence of dual mold infections in at-risk patients is necessary for optimum management. PCR methods in tissue sections increase the diagnosis of dual mold infections.
Candida in the biliary tract: extrapolative PK/PD considerations

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Objective: Candida norvegensis is an uncommon Candida species causing infection in immunocompromised hosts. It is intrinsically resistant to Fluconazole, which is commonly the empiric choice for therapy. A strong association with post-liver transplant status, as in this case and near-100% mortality, likely due to inappropriate antifungal therapy and lack of source control has been reported in the literature.

Methods and Results: Mr. AK, a 32-year-old gentleman, 10 months post-liver transplant recipient, had stenting done for biliary stricture. A month later, he developed E. coli cholangitis and bacteremia for which he was treated with Meropenem. Flaky pus was seen during stent exchange which grew Candida norvegensis on culture with 97% probability of identification (Fig. 1). Suspecting cholangitic abscesses, patient would require at least 3 weeks of antifungals and Meropenem.

Since there is limited data about antifungal susceptibilities of C. norvegensis, MICs were generated on VITEK by using names of other Candida species. Micafungin was found to show an MIC of 0.12 and voriconazole of 0.25. EUCAST breakpoints are only provided for certain species and for others treatment is based on PK/PD considerations. The PK/PD indices for efficacy of voriconazole is AUC/MIC of 30 and of Echinocandins is Cmax/MIC of 1R, which prompted extrapolation in this case.

The extrapolative PK/PD considerations were as follows (Table 1).

Micafungin dose of 150 mg generates a biliary trough level of 1.9 mcg/ml, which will lead to Cmax/MIC (1.9/0.12) of 15.83, exceeding the required target Cmax/MIC for cidal therapy of echinocandins which is 1R. Micafungin and Meropenem were administered for 3 weeks and the patient responded well to treatment.

Conclusion: This case highlights the importance of speciation of Candida spp, extrapolating MICs and breakpoints for species where data are not available, early source control and use of PK/PD considerations in choosing the appropriate antifungal agent on a case-by-case basis.