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Case Report

Fusarium Solani: A Causative Agent of Fusarial Sinusitis in Diabetic Patient

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ABSTRACT

Genus *fusarium* is responsible for a rare infectious disease- fusariosis. In immunocompromised patients it is being reported as an emerging agent of opportunistic infection. It causes a wide variety of human diseases ranging from superficial to disseminated. In an Immunocompetent host, it manifests as allergic sinusitis while invasive sinusitis is seen in immunocompromised hosts. In this paper, the authors present a case of a 62 year old type II diabetic male patient with mucopurulent foul smelling nasal discharge with headache. Nasal discharge and biopsy of the blackish mass from the septum was received in microbiology laboratory for fungal microscopy and culture.10% KOH mount of both the specimens showed hyaline branched septate fungal hyphae. Culture on Sabouraud's dextrose agar showed purplish colonies with diffusible reddish pigment. Lacto phenol cotton blue mount of the colony showed septate hyphae along with typical multiseptate sickle shaped macroconidia, pear shaped micrcoconidia and chlamydospore .Histopathological examination of biopsy mass showed the presence of dense infiltration of the tissue with Neutrophils, lymphocytes and septate fungal hyphae. A tentative diagnosis of fungal sinusitis by fusarium species was done.

Key words: *Fusarium solani*, sinusitis, immunocompromised

INTRODUCTION

Fungal infections may occur following trauma or wound contamination. [(1)] Fusarium species are non dermatophytic hyaline moulds found as saprophytes and plant pathogen. It has emerged as a pathogen in immunocompromised patients. The main route of entry is through direct inoculation or inhalation of spores. It causes superficial infections like onychomycosis and keratitis as well as disseminated infections occurring exclusively in severely immune-compromised patients. [(2)] The most frequent cause of human infection is *Fusarium solani*. The portal of entry includes the paranasal sinuses, [(3)] lungs [(4)] and skin. [(5)] Here we present a case of nasal septal mass with mucopurulent foul smelling discharge from which F.solani was isolated.

CASE REPORT

A 62 year old chronic smoker male patient came with a swelling on his palate in the dental OPD. He was a known diabetic and was on treatment since last 2 years. He had undergone tooth extraction 15 days back. He was a farmer by occupation. In an

OPG (orthopentomogram) finding an irregular mass in the nasal sinus was observed. Patient was referred to the ENT department. He complained of headache of gradual onset, which was continuous in nature and of a throbbing type which was aggravated by cold drinks and climate change. He had a low grade intermittent fever since one month, with a marked rise in temperature at night and was associated with chills/rigor. He had a foul smelling mucopurulent non blood stained nasal discharge.

He was clinically suspected to be a case of mucormycosis.

Mucopurulent Nasal discharge and a biopsy of the blackish mass from the septum were sent for fungal culture and histopathological examination respectively.

Both the samples were inoculated on to two slants of Sabouraud dextrose agar (Hi-media). The slants were incubated at 25°C and at 37°C respectively.wet mount of nasal discharge and biopsy mass with 10% KOH showed hyaline, septate, branched, fungal hyphae. (Figure 1) After 24 hrs incubation, Sabouraud dextrose agar showed small whitish colonies on both slants. After 4-5 days of further incubation the colonies appeared bluish to purplish with a diffusible reddish pigment. (Figure 2) The multiseptate sickle shaped macroconidia (figure 3), ovoid macroconidia and equisetic chlamydospore (figure 4) were observed on LCB mount which are characteristic of Fusarium species. Slide culture was done which showed multiseptate sickle shaped macroconidia and micro conidia in false heads on long phialides (figure5). KOH mount and culture from the biopsy sample also gave similar findings. Histopathology examination showed the presence of dense infiltration of the tissue with Neutrophils, lymphocytes and septate fungal hyphae. The patient was treated with Amphotericin B for almost one month but showed no clinical response. Then patient was treated with Voriconazole for 3 weeks with clinical improvement. Surgical debridement of the affected part was done. The Isolate was sent to PGI Chandigarh for fungal sensitivity testing. Fungal sensitivity report showed that the isolate was sensitive only to Voriconazole and showed borderline sensitivity for Amphotericin B.

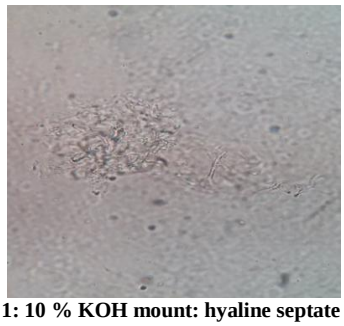

Figure 1: 10 % KOH mount: hyaline septate hyphae

Figure 2: Culture on Sabouraud's dextrose agar

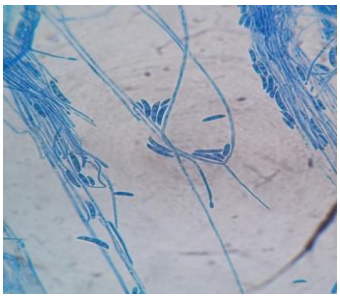

Figure 3: LCB mount –sickle shaped Macroconidia

Figure 4: Chlamydospore of Fusarium species

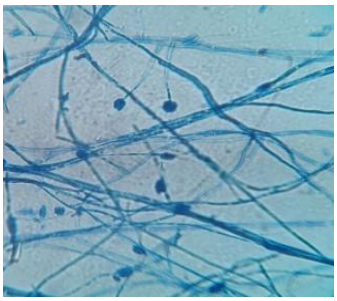

Figure 5

DISCUSSION

Genus Fusarium is a filamentous fungus widely distributed in soil and in association with plants. Majority of species are harmless saprophyte, relatively abundant members of the soil microbial community. [(6)] *Fusarium* species infections are classified as hyalohyphomycoses, which are a heterogeneous group of fungal infections in which only hyaline, or non-pigmented, septate hyphae are seen in tissues. *Fusarium solani* is the most commonly isolated species from clinical specimens followed by *Fusarium oxysporum* and *Fusarium moniliforme*. [(7)] Ramakrishna Pai et al (2010) [(8)] have reported a case diabetic ulcer due to *Fusarium solani*. Thomas Kuruvilla and Meena Dias (2012) [(9)] have isolated *Fusarium solani* from two cases of skin infections and one case of onychomycosis.

In immunocompromised patients, sinusitis is always invasive. [(10)] Nucci et al 2003 [(11)] have reported sinus involvement along with dissemination in 18% cases of fusariosis. In the present case, maxillary sinuses were involved. The mortality of rate with fusariosis ranges from 50-60 %. [(12)] A fatal case of immunocompromised child due to fusarial sinusitis is reported from New Delhi. [(13)]

The diagnosis of fusariosis depends on the clinical presentation of disease and culture report. Culture of the sinus aspirate/respiratory secretions in immunocompromised host should always be considered diagnostic of fusarial infections. In the present case Fusarium species was isolated twice from nasal discharge as well as from biopsy material. Histopathological findings also showed presence of septate hyphae. Thus it confirms the diagnosis.

Outcome of infections in immunocompromised patients depends on the degree of immunosupression and extent of infection. Accurate diagnosis and targeted treatment strategies are necessary to achieve optimal outcome.

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