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Case Report

Sino Ocular Zygomycosis Caused by Syncephalastrum recemosum in a Diabetic Patient

Dr. Jayaprakash Rao S[1], Dr. Sasikala G[1], Dr. HaseebaTanveer[2], Dr. Alekhya P[2], Dr. Jayalakshmi L[3]
[1]Prof. of Microbiology Osmania medical college, Hyderabad, Telangana, India
[2]3rd yr Postgraduate of Microbiology Osmania medical college, Hyderabad, Telangana, India
[3]Associate Prof. of Microbiology Osmania medical college, Hyderabad, Telangana, India

***Corresponding author**
Dr.Jayalakshmi L
Email: jayalingam12@yahoo.com

Abstract: Invasive sinooccular Zygomycosis is a fulminant opportunistic disease often affecting poorly controlled diabetics of all agescommonly caused by genera Rhizopus, Mucor and Rhizomucor. Syncephalastrum racemosum belongs to Zygomycetes group of fungi known to cause skin & soft tissue infections but invasive infections were rarely reported. We report a sino ocular infection caused by Syncephalastrum racemosum in a 58 year diabetic woman clinically diagnosed as left sided rhinosinusitis with involvement of orbit. Treatment with surgical debridement, antifungal therapy with Amphotericin B along with correction of underlying metabolic acidosis and glycemic control saved the patient.
Keywords: Zygomycosis, Syncephalastrum , opportunistic, rhinosinusitis, metabolic acidosis

INTRODUCTION

Zygomycosis is an acute or chronic infection caused by several fungal agents belonging to phylum Zygomycota. These are the saprophytic fungi found ubiquitously in the environment and highly opportunistic pathogenic organisms invariably entailing in fatal consequences, especially when an obvious predisposing condition like diabetes mellitus, immunocompromised condition is present. Phylum Zygomycota includes order Mucoralers and order Entemophtherales. Syncephalastrum belongs to order Mucorales. Mycosis caused by fungi belonging to order Mucorales is also called as Mucormycosis [1,2] and seen in different anatomical sites - paranasal, rhino-orbital, rhino-orbito-cerebral, pulmonary, gastro intestinal, disseminated [3].

CASE REPORT

A 58 year old woman, diabetic for more than 10 years presented with foul smelling nasal discharge since 8 days, decreased vision & proptosis of left eye since 1 day.She was clinically diagnosed as rhinosinusitis with probable involvement of left orbit. Biopsy material collected after Diagnostic Nasal Endoscopy (DNE) from sphenoethamoidal recess, maxillary antrum and ethamoidal crest were received at Microbiology Laboratory along with nasal discharge for bacterial and fungal culture. The biopsy specimen was also sent for histopathological examination.

On microscopy using 10% KOH wet mount preparation, the biopsy specimen revealed broad, aseptate, irregular, nonbranching hyphae in necrotic material (Fig 1).The same microscopy report was informed immediately to the clinician. Both the biopsy and nasal secretion specimens were inoculated on Blood agar, MacConkey agar and Brain Heart Infusion broth for bacterial culture and incubated at 37^0C. For fungal culture the specimens were inoculated on Sabouraud's Dextrose Agar (SDA) with chloramphenicol and also on SDA with chloramphenicol &actidione. These fungal cultures were incubated at 25^0C. White cottony growth was observed on blood agar and SDA with chloramphenicol after 48 hrs and the growth turned grey black and profuse after 4 days of incubation (fig 2). Lacto phenol cotton blue preparation of the isolates was observed under 40X magnification of microscope. Broad, non septate, irregular, non branching hyphae withspores arranged in cylindrical merosporangia on the swollen tips of short sporangiophores arising from hyphae were observed. No rhizoids were seen(fig 3). No growth was observed on SDA with chloramphenicol and actidione. Heamatoxylin and eosin staining of histopathology

section was reported as showing broad nonseptate hyphae. Complete blood picture revealed neutrophilia and leucocytosis. High blood sugar levels and HBA_1C level of 9.1 report revealed uncontrolled diabetes mellitus. Urine examination revealed presence of glucose and ketones suggesting ketoacidosis.

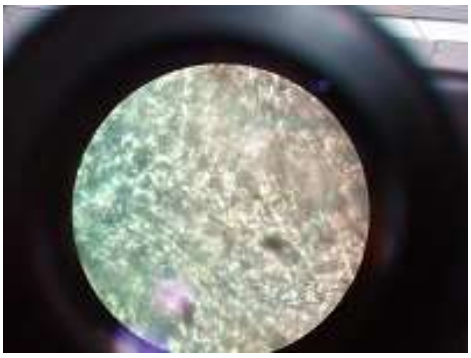

Fig-1: 10% KOH mount of biopsy specimen showing broad aseptate ribbon like hyphae in necrotic material, 40 x magnifications

Fig-2: White cottony growth turning to grey black on SDA with Chloramphenicol after 48 hours of incubation at 25^0C

Fig-3: Lactophenol Cotton blue mount of culture isolate showing broad, nonseptate hyphae and spores arranged in cylindrical mesosporangia on swollen tips of sporangiophores, 40x magnification

Rapid mycelial growth on SDA with chloramphenicol& blood agar and absence of growth on SDA with actidione suggest that the isolate was Zygomycetes. The broad nonseptate, ribbon like, irregular hyphae with spores within cylindrical merosporangia arranged on the swollen tips of sporangiophores suggest morphological identification as Syncephalastrum racemosum. Treatment with parenteral amphotericin B was started immediately after microscopy report. Surgical debridement, aggressive therapy with parenteral amphotericin B and correction of underlying metabolic acidosis with proper glycemic control resulted in good prognosis.

DISCUSSION

Among the different morphological forms of Zygomycosis rhino-orbital form was the most common and may progress further to rhino-orbito-cerebral form. These fungi are usually harmless commensals but in extraordinary circumstances they can cause invasive disease. The infection may start with inhalation and deposition of spores on nasal turbinates[4]. Sporulation and growth requires the host defences to be compromised or some debilitating illness as identified in over 95% of cases.The commonest predisposing factor for invasive Zygomycosis is uncontrolled diabetes mellitus with an overall prevalence of 0.15% of diabetics [5].

Diabetic patients are predisposed to mucormycosis because of the decreased ability of their neutrophils to phagocytose and to adhere to the endothelial walls. Further the acidosis and hyperglycemia provide an excellent environment for the fungus to grow [6,7]. The prognosis in mucormycosis has markedly improved over the past 30 years with 90% survival rate [8, 9]. Chakraborty *et al.* analysed 178 hospitalised cases of zygomycosis in northern India and found co-existing uncontrolled diabetes in 73.6% of patients [10].

Syncephalastrum recemosum causing intra-abdominal zygomycosis was described by Schelbusch *et al.*, which was successfully treated with partial surgical debridement and Amphotericin B lipid complex [11]. Baradkar VP *et al.* reported the first case of Sino-orbital infection by Syncephalastrum recemosum in a chronic hepato-renal disease patient [4]. Later rhino-orbital-cerebral disease in a diabetic on oral hypoglycemic agents was reported by Alice JM *et al.* [12]. Fulminant pneumonia caused by Syncephalastrum racemosum in an immune compromised Non – Hodgkin lymphoma patient was described by Georgina RG *et al*. [13].

At present Amphotericin B is the drug of choice for Zygomycosis as it is effective in eradicating the primary lesion and also can control micro metastasis. Incorporation of these drugs in liposomes results in reduced nephrotoxicity due to altered physiological distribution [11, 14]. Surgery remains the primary mode of treatment. Early institution of medical and surgical therapy is an important factor in favouring good outcome.

CONCLUSION

High index of clinical suspicion of invasive fungal infection in immunosuppressed patients is required. Proper communication between clinician and Microbiologist help in early institution of therapy that helps in good prognosis.

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