EXOPHIALA SPECIE:
A CASE OF RHINO CEREBRAL MUCORMYCOSIS IN DIABETIC WOMAN

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ABSTRACT

42 year old woman, newly diagnosed diabetes mellitus, presented with complaint of left side facial pain and numbness over the lips. These symptoms were sudden in onset associated with fever, diplopia at left eye on seeing toward lateral side and left side hyposmia. Had some relief in pain with oral medication and aggrevated with jaw movements, CT PNS (computed tomography Para nasal sinus) showed sinusitis with left orbital cellulitis and left level II(upper jugular group) lymphadenopathy , underwent FESS (functional endoscopic sinus surgery) procedure and tissue biopsy specimen were taken which showed tissue invasive fungal infection morphologically suggestive of Mucormycosis ,tissue culture had heavy growth of exophiala species. She had 2 nasal washes during this whole course of illness was treated initially with injection amphotericin 50mg till the arrival of culture report and then switched to capsule Itraconazole for 6 months with regular surveillance. Her symptoms grossly improved.

BACKGROUND

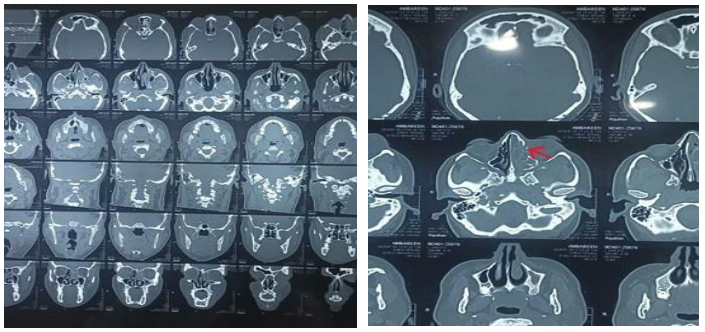
Rhino cerebral mucormycosis is also known as zygomycosis, caused by filamentous fungi effecting nose, paranasalsinuses and brain mostly effect immune compromised individual. Due to already compromised immune system fungus exhibit rapid and aggressive growth leading to fulminant and life threatening condition, timely intervention can save lives and permanent neurological complications, in most cases individuals presents with acute fungal infection, chronic infections are slowly progressive and takes over several weeks [1].Exophaila is a genus of anamorphic fungi having about 28 specie comprising of opportunistic black yeasts, which belongs to Ascomycotina[2]. Exophiala specie are environmental fungi found in decaying wood and soil enriched with organic waste some species like Exophiala dermatitidis , Exophiala jeanselmei where access to healthcare is often limited. The World Health Organization reports that pneumonia is responsible for almost 15% of the fatalities in children younger than five years of age, highlighting a critical need for early diagnosis and effective management[1]. Pneumonia causes inflammation and fluid accumulation in the lungs, which can be further complicated by underlying conditions such as congenital heart diseases (CHDs). CHDs are anatomical abnormalities of the heart present at birth, and they remain a significant global health burden, affecting approximately 1 in every 100 live births[2].

In children with CHD, respiratory infections such as pneumonia can exacerbate existing cardiac dysfunction, leading to increased severity of illness, prolonged hospital stays, and a higher risk of complications[3]. The occurrence of congenital heart diseases in pneumonia not only complicates the clinical course but also affects treatment outcomes, often requiring specialized and more aggressive therapeutic interventions[4]. Despite this, limited data are available on the frequency and impact of CHD in children presenting with pneumonia, particularly in resource-limited settings like Pakistan. Understanding the prevalence of CHD in children with pneumonia is essential for informing clinical decision-making and improving outcomes.

There is growing evidence suggesting that socioeconomic and environmental factors, such as access to healthcare, sanitation, and nutrition, may influence both pneumonia incidence and CHD prevalence[5]. Children from rural areas, for example, may face a higher risk due to reduced access to medical facilities and poorer living conditions[6]. Additionally, studies have shown that early detection and management of CHDs in children with pneumonia can significantly improve survival rates[7]. However, in many regions, CHDs often go undiagnosed until they present with severe symptoms, complicating the management of concurrent respiratory infections[8].

This study aims to determine the frequency of CHDs in kids suffering from pneumonia presenting to a teaching hospital in Pakistan. By assessing the prevalence of CHDs in this population, we hope to inform healthcare providers about the importance of early detection and provide evidence for the development of targeted interventions to alleviate the impact of childhood pneumonia linked to CHDs. felt warm to touch associated with fever of 102-103 °F 1 month back to another health facility where CT PNS (computed tomography Para nasal sinus) was advised ,which was suggestive of sinusitis with left orbital cellulitis and left level II (upper jugular group) lymphadenopathy (figure1), patient was started on conservative treatment for cellulitis and discharged after improvement , but again presented after 7 days with the complaint of left eye pain and headache, ophthalmological examinations performed were normal, this time again CT PNS was advised which showed left sided sinusitis with sub periosteal abscess as compared to previous one done 9 days back reveals interval progression(figure 1), then she was referred to Otorhinolaryngology department where left sided nasal endoscopy was done and biopsy specimen was taken for histopathology , showed tissue invasive fungal infection morphologically ,aseptate hypea histopatologically suggestive of mucormycosis ,she was started on injection amphotericin B(conventional) based on hisopathology report, then she was referred for infectious diseases consultation and with presenting complaint of left side facial pain associated with numbness of lips , unable to open mouth, left side hyposmia , diplopia at left eye. On presentation she had blood pressure of 160/90mmhg, heart rate of 90/minute temperature of 98 °F, oxygen saturation of 98% at room air. Her labs shows Hemoglobin of10.0gm/dl, Total leucocyte count 11.36x10^3/

Figure 1:



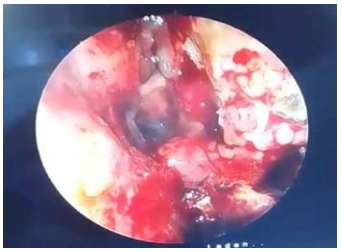


Figure2:
Nasal cavity seen during FESS procedure

DISCUSSION

After a thorough literature search, exophiala is a rare cause of fungal infection , however it can cause cutaneous, sub cutaneous and systemic infection both in immune competent and immune compromised individuals ,most commonly cause skin infections and most frequent deep infection is pulmonary infection due to inhalation. Most often infection caused by exophiala are chronic and resistant [2].Central nervous system(CNS) infection due to exophiala specie is rare and fatal, occurs mostly in immune compromised and individual with protein 9 deficiency, however a healthy individual with no underlining disease or gene deficiency can also be infected with exophiala dermatitis causing meningoenchephalitis like fatal condition[5]. Zygomycosis is rare condition with high fatality rate, mostly occurs in individuals with hematological conditions but in non hematological immune compromised patients it causes various infections depending on underlying conditions such as rhino-orbital cerebral in diabetic patients, pulmonary infection in patients with malignancy or organ transplantation, disseminated infection in iron overloaded or deferoxamine treated patients, cerebral with no sinus involvement in intravenous drug users, gastrointestinal in premature infants or malnourishment, and cutaneous infection after direct inoculation in immunocompetent individuals with trauma or burns[6,10].Unusual pathogen can be presented with variety of ophthalmic manifestation, rarely present with delayed onset postoperative endopthalmitis,endogenous endopthalmitis progressing to panopthalmitis in immune compromised individual[7,8]. Phaeohyphomycosis is a mycotic infection commonly associated with immune compromised patients causes subcutaneous abscessesandcysticmasses[9]. Subcutaneous mycosis eumycetosis,phaeohyphomycosis and chromoblastomycosis which is chronic subcutaneous mycosis usually involve legs characterized by verrous nodular lesion require systemic antifungal and surgical intervention[11,12]. In our case patient was newly diagnosed diabetic , and the cause of her rhino cerebral mucormycosis found out through culture was Exphiala specie which is rare cause of fungal infection, and patient improved when treated appropriately . As specie can be identified by moleculer studies and some through genetic studies but due to our limitation we were unable to find out the exact specie.

TREATMENT FOR EXOPHIALA SPECIE:

Primary regimens:

Small /few lesions:

Itraconazole 300mg po daily or Terbinafine 250mg po daily given 3 monthes before surgical excision and for additional 6-9 monthes

Chronic, extensive burrowing lesions:

Itraconazole 200-400 mg po daily for 6-12 monthes or until respose followed by long term suppressive therapy

Alternative regimens:

Itraconazole 200-400mg daily+Flucytosine1500mg po q6hourly daily

Itraconazole 200-400mg daily +Terbinafine250 mg po daily Posaconazole(Note: different dosing delayed release tabs/IV vs suspension better levels achieved with delayed release tabs)

Delayed release tabs 300mg po q12hourly 2 doses and then 300mg po daily OR Suspension 400 mg po q12hourly

Anecdotal report of benefit from adding topical imiquimod,5% to Itraconazole or Itraconazoleplus Terbinafine. Imiquimode was applied 5 timed /week. Initial increase in inflammation and then slow healing over monthes

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Interpretation Analysis & Discussion	FA

CONFLICT OF INTEREST

None Declared

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Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.