



Aspergillus Terreus Infection from a Chronic Oral Ulcer of An Immunocompetent Patient: A Case Report

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Date of Submission: 18-02-2024

Date of Acceptance: 28-02-2024

ABSTRACT: Aspergillosis is the second most common opportunistic fungal disease. While *Aspergillus fumigatus* and *Aspergillus flavus* are the most common etiological agents, *Aspergillus terreus* is gradually emerging as an important pathogen, accounting for almost 4% of all cases of invasive aspergillosis. Here, we report a case of an immunocompetent patient with complaints of swelling on the right upper jaw, inability to open mouth widely and non-healing ulcer on the hard palate. Examination reveals severe bone loss, teeth mobility and right submandibular lymph node enlargement. Surgical debridement was done and tissue sample was sent to Microbiology department for processing according to standard mycological techniques. KOH mount showed fungal elements like hyphae which were septate. Culture on SDA showed cinnamon brown colonies with yellow pigment on the reverse side. Microscopy showed biserial, compact & columnar conidial heads, septate hyphae and conidiophores were hyaline and smooth-walled suggestive of *A. terreus*. Lesion was surgically excised. *Aspergillus* spp. are saprotrophs with a worldwide distribution and capable of causing localised and disseminated infections including Invasive Pulmonary Aspergillosis, sinusitis, tracheobronchitis, cutaneous disease, etc. Unlike other *Aspergillus* species, most *A. terreus* strains are resistant to Amphotericin B. Hence, proper and timely identification is crucial and management relies on prevention, antifungals like Voriconazole/ Itraconazole and surgical intervention. Infection is common in immunocompromised patients but has also been reported from immunocompetent patients.

KEYWORDS: *Aspergillus terreus*;
immunocompetent; non-healing ulcer.

I. INTRODUCTION:

Aspergillus spp. are saprotrophs with a worldwide distribution and capable of causing

localised and disseminated infections including invasive pulmonary aspergillosis, sinusitis, tracheobronchitis, cutaneous disease, allergic disease, etc.¹ *Aspergillus terreus* complex can cause infection in various body sites² and is gradually emerging as an important pathogen, accounting for almost 4% of all cases of invasive aspergillosis.³ It has a high mortality rate and lower clinical response to treatment compared to other *Aspergillus* species, due to its high dissemination rate and intrinsic resistance to Amphotericin B.⁴ While diseases caused by *A. terreus* infection commonly occurs in immunocompromised patients, it has also been found to affect immunocompetent individuals as well.³

II. CASE REPORT:

A 19 years old male patient reported to the Dental OPD with complaints of swelling on the right upper jaw, inability to open mouth widely and non-healing ulcer on the hard palate. (Fig 1.) Examination revealed severe bone loss, teeth mobility and right submandibular lymph node enlargement. An Orthopantomogram (OPG) revealed generalised mild horizontal bone loss, loss of lamina dura and discontinuity of sinus wall.

Contrast Enhanced Computed Tomography (CECT) scan of the oropharynx with maxilla was done, which revealed a 1.3 x 1.9 cm, ill-defined soft tissue density, involving the right side of the hard palate. Erosion of the alveolar process of right maxilla with subtle extension into right maxillary sinus and into the right retromolar trigone area was observed.

Few enlarged lymph nodes were visualised at level IB and II on the right side, the largest size measuring 1.6 x 1.3cm at level II. FNAC of the lymph nodes showed Reactive Lymphadenitis. Histopathological biopsy revealed a sub-acute inflammatory lesion consisting of parakeratotic stratified squamous epithelium. The intervening



connective tissue stroma showed collagen fibres, interspersed with fibroblasts, few small and large endothelial lined blood vessels and dense chronic inflammatory cell infiltrate in the form of lymphocytes, neutrophils and plasma cells. PAS stain was negative for Actinomycosis.

Patient tested negative for HIV, Tuberculosis and Multiple Myeloma. He had no history of diabetes, or any other known medical or surgical condition. No active systemic foci of infection were detected.

Patient was initially treated with Inj. Meropenem 500mg, Inj. Metronidazole 500mg and Inj. Gentamicin, to which there was no clinical response. He was posted for sequestrectomy and debridement surgery after which he was discharged.



Fig. 1. Ulcer located on the right upper palate

III. MATERIAL AND METHOD:

Intra operative tissue sample was sent to Microbiology Laboratory. Sample was processed for direct microscopy in KOH mount, Gram stain and cultured on Sabouraud's Dextrose Agar (SDA). 10% KOH mount showed fungal elements i.e., septate hyphae. Gram stain revealed only presence of leucocytes with no organism seen.

Growth on SDA was detected 4 days after incubation at 37°C and showed velvety, cinnamon-coloured colonies with yellowish-brown pigment on the reverse side. Lactophenol Cotton Blue (LPCB) mount from the colonies showed biserial, compact & columnar conidial heads with septate hyphae. (Fig. 2.) Slide culture on Corn Meal Agar showed septate hyphae with dichotomous branching at acute angles, short, hyaline conidiophore, biserial phialides and presence of aleurioconidia. (Fig. 3.)

Isolate was identified as *A. terreus* based on the colony morphological features as well as presence of aleurioconidia which is characteristic of *A. terreus*.

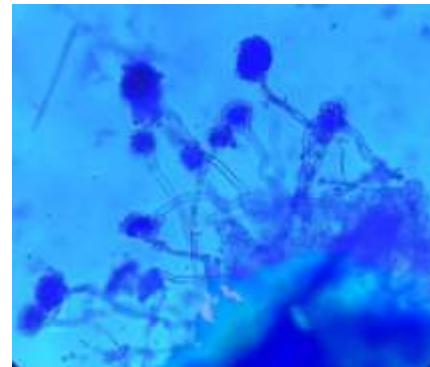


Fig.2: LPCB mount of *A. terreus*



Fig.3: Aleurioconidia of *A. terreus*

IV. DISCUSSION:

Infection with *A. terreus* is less common compared to *A. fumigatus* and *A. flavus*. However, it is known to be more aggressive with poor prognosis.⁵ Limited studies of its isolation from non-immunocompromised patients have been published over the last few years. Al-Qahtani AS et. al reported the isolation of *A. terreus* from an immunocompetent patient of chronic fungal sinusitis (2012).⁶ Elsayy A et.al reported a case of *A. terreus* meningitis with a history of sinusitis in an immunocompetent patient⁷(2015), and Akhaddar A et. al⁸ (2008), reported the isolation of *A. terreus* from an immunocompetent patient of sphenoidal sinusitis with intra-orbital and intracranial extension⁸.

In India, Dave et al (2015) reported a case of cutaneous mycoses caused by *A. terreus* in an immunocompetent agricultural worker⁹, and Panigrahi et al (2014) reported a rare case of *A. terreus* endogenous endophthalmitis in an immunocompetent patient with subretinal abscess.¹⁰ In all the above cases, including ours, diagnosis was confirmed by culture.¹¹ The presence of aleurioconidia -a non-pigmented, accessory conidia arising directly from the vegetative hyphae and helps in disease dissemination, distinguishes *A. terreus* from the other *Aspergillus* species.^{2,3}



Most strains of *A. terreus* are known to exhibit intrinsic resistance to Amphotericin B, unlike other *Aspergillus* infection which can be treated by it.³ Management, thus, relies on prevention, antifungals like Voriconazole/Itraconazole and surgical intervention.⁵ Maldonado et. al has highlighted in his study, the need for development of better diagnostic investigations, effective anti-fungal therapy and more studies to guide the treatment of infections caused by *A. terreus* complex.³

V. CONCLUSION:

Infections due to *A. terreus* are on the rise and are concerning due to its intrinsic resistance to Amphotericin B and its potential to cause rapid, progressive, invasive diseases with a poor prognosis.¹² Over the years, reports of its isolation among immunocompetent patients have also increased.^{4,6,7} This dictates the necessity of proper and timely identification of *A. terreus* infection in order to start appropriate therapy. To conclude, our study adds to the literature on *A. terreus* infection in immunocompetent patients.

ACKNOWLEDGEMENT:

Special thanks to Department of Oral and Maxillofacial Pathology, Government Dental College, Nagpur, for their collaboration and cooperation.

REFERENCES:

- [1]. Chander J. Textbook of medical mycology. JP Medical Ltd; 2017 Nov 30.
- [2]. Walsh TJ, Hayden RT, Larone DH. Larone's medically important fungi: A guide to identification. John Wiley & Sons; 2018 Jun 1.
- [3]. Lass-Flörl C, Dietl A-M, Kontoyiannis DP, Brock M. 2021. *Aspergillus terreus* species complex. Clin Microbiol Rev 34:e00311-20.
- [4]. *Aspergillus terreus*? A New Threat for Immunocompetent Patient Hiram Maldonado, MD; Jose Nieves, MD; Ricardo Fernandez, MD San Juan City Hospital, San Juan, PA
- [5]. Thayanidhi P, Subramanian A, Kindo AJ. *Aspergillus terreus* : An emerging pathogen: A case series. J AcadClinMicrobiol2014;16:96-9
- [6]. Al-Qahtani AS. Chronic fungal aspergillus terreus sinusitis in an immunocompetent patient: Case report. Saudi Journal of Otorhinolaryngology Head and Neck Surgery. 2012 Jan 1;14(1):43.
- [7]. Elsayy A, Faidah H, Ahmed A, Mostafa A, Mohamed F. *Aspergillus terreus* meningitis in immunocompetent patient: a case report. Frontiers in Microbiology. 2015 Dec 1;6:1353.
- [8]. Akhaddar A, Gazzaz M, Albouzidi A, Lmimouni B, Elmostarchid B, Boucetta M. Invasive *Aspergillus terreus* sinusitis with orbitocranial extension: case report. Surgical neurology. 2008 May 1;69(5):490-5.
- [9]. Dave P, Mahendra R, Pal M. Etiologic significance of *Aspergillus terreus* in primary cutaneous mycosis of an agricultural worker. Molecular Microbiology Research. 2015 Feb 17;5.
- [10]. Panigrahi PK, Roy R, Pal SS, Mukherjee A, Lobo A. *Aspergillus terreus* endogenous endophthalmitis: Report of a case and review of literature. Indian J Ophthalmol2014;62:887-9.
- [11]. Dismukes WE, Pappas PG, Sobel JD, editors. Clinical mycology.
- [12]. Baddley JW, Pappas PG, Smith AC, Moser SA. Epidemiology of *Aspergillus terreus* at a university hospital. Journal of clinical Microbiology. 2003 Dec;41(12):5525-9.
- [13].