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MUSCLE FUNGAL GRANULOMA DUE TO CLADOSPORIUM SPECIES: A NOVEL SURPRISE

Surgery

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ABSTRACT

The spectrum of mycotic diseases continue to expand, making it challenging for treatment of infections caused by a diverse array of opportunistic fungi especially in immuno-compromised individuals. The species of Cladosporium implicated in human infections is found as causative agents for infections of the central nervous system, lung, liver, keratitis, and dental granulomas. Involvement of a muscle by a fungal granuloma in an immunocompromised individual by Cladosporium species is very rare and has been never reported before to the best of our knowledge. Below we present a novel case of a 34 year old, Post-transplant Immunocompromised male to have developed a lump within the Triceps Brachii muscle which was found to be a Cladosporium Cladosporioides granuloma and was treated successfully with a multimodal approach of Surgery and Voriconazole anti-fungal therapy.

KEYWORDS

Muscle granuloma, Cladosporium Cladosporioides, Post renal transplant, Phaeohyphomycosis

INTRODUCTION:

Phaeohyphomycosis was a term first used in 1974 by Ajello et all[1] which referred to a multi-organ infection caused by dematiaceous i.e filamenteceous melanized fungi such as Cladosporium, Phialophora, Curvularia, Exophiala, etc that were found growing in different types of soil and especially thriving on dead decaying matter. These are known to be common contaminants of food and may spread airborne as well.

The Cladosporium genus comprises of common saprobic, phytopathogenic and human pathogenic species. It is one of the dematiaceous fungi that despite producing infections rarely within humans especially with a higher disposition to immunocompromised hosts, and are generally seen to occur in the brain, lung, liver and even found in cutaneous forms. Despite which it yet has never been documented in medical literature to produce a granuloma deep within the muscle to the best of our knowledge. Hence, below we present our novel case of Muscle Fungal granuloma due to Cladosporium Cladosporioides species, occurring in a post renal transplant immunocompromised 34 year old male.

CASE REPORT: MUSCLE FUNGAL GRANULOMA

A 34 year male patient, post renal transplant on immune-suppressive treatment, presented with swelling over the left upper arm on its posterior aspect since 5 months. There was pain associated with the swelling which used to get aggravated on movements at the elbow joint. On examination, skin over the swelling was normal. It was a globular swelling with firm consistency, regular borders and was found to be attached to the underlying muscle i.e. triceps brachii and its mobility was restricted on contracting the muscle.

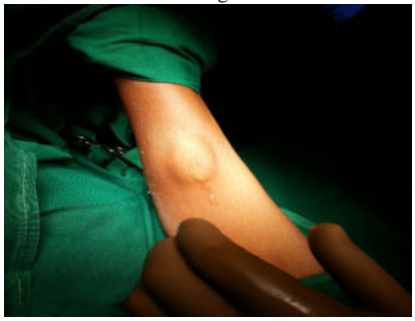
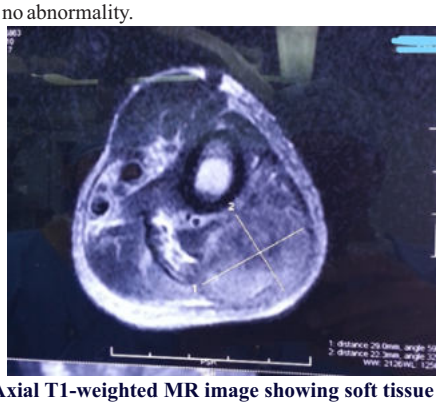


Fig 1: Left upper arm swelling in posterior compartment, skin over the swelling Normal

Magnetic Resonance (MR) examination confirmed it to be an intramuscular swelling. Hemogram, biochemical and serology tests revealed no abnormality.



(Fig 2: Axial T1-weighted MR image showing soft tissue lesion in lateral head of triceps brachii)

Chest X ray showed opacity in the basal area of the right lung, suggestive of previous healed lesion of infective etiology. Considering a differential diagnosis of soft tissue tuberculosis (TB) in mind, the swelling was excised en bloc under general anaesthesia. The swelling was found in the triceps muscle belly.

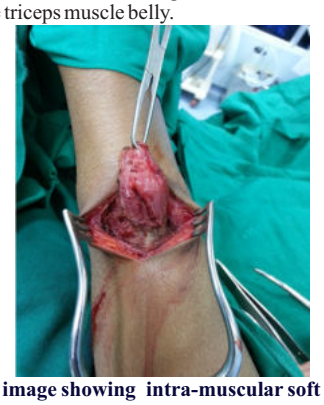


Fig 3: Intra-op image showing intra-muscular soft tissue lesion in lateral head of triceps brachii

The specimen was then sent for Histopathological examination, which later confirmed it to be a Fungal Granuloma as seen in the pictures below.

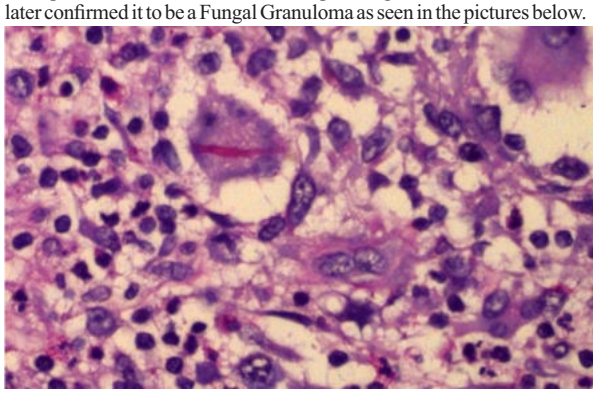


Fig 4: Photomicrograph showing fungal granuloma with fungal hyphae within giant cell

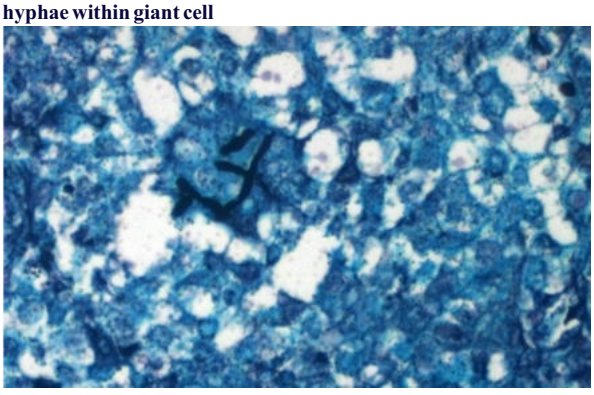


Fig 5: Histology showing pigmented fungal hyphae by Gomori methenamine silver stain

The fungal culture and special staining confirmed it to be due to "Cladosporium Cladosporioides" species.

Fig 6: Fungal Culture showing white, grey feathery, velvety growth with olive-black or olive-brown edges of Cladosporium species

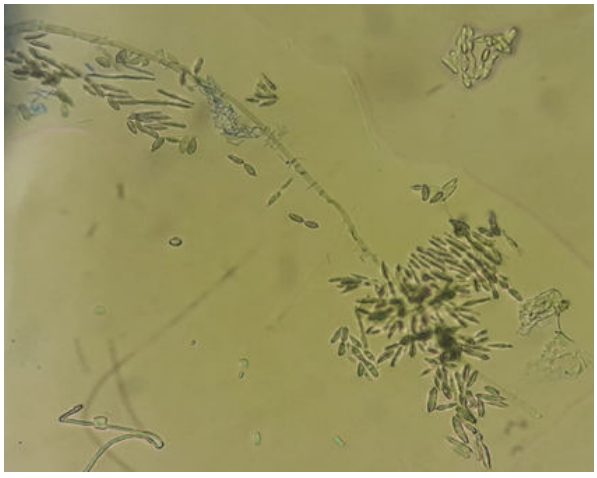


Fig 7: Direct microscopy depicting typicall hyphae of Cladosporium Cladosporioides, micronematous conidiophores and conidial chains

The specimen was also sent for routine tissue culture, TB culture and Mycobacterium GeneXpert which turned out to be negative. Patient received intravenous antifungal Voriconazole for 3 days followed by oral medication for next 2 weeks. On follow up after 1 year, patient showed no evidence of disease.

DISCUSSION:

"Cladosporium Cladosporioides" are darkly coloured dematiaceous mould, characterized by darkly pigmented colonies and are found predominantly in the tropical/sub-tropical climates such as India. The Cladosporium genus comprises of common saprobic, phytopathogenic and human pathogenic species, most of which are found growing in different types of soil, while especially thriving on decaying plant matter. These are common contaminants of food and may spread airborne as well. Dematiaceous species such as Cladosporium belonging to the human pathogenic species are known to cause fungal infections called Phaeohyphomycosis[2] which forms the primary base of our study. As a sole pathology, Phaeohyphomycosis is seen rarely, while medical literature has shown that cases are generally observed to have a predilection to immunocompromised hosts[3] of which transplant recipient cases being the widest effected immunocompromised population[4]. Other immunocompromised cases such as those suffering from Diabetes mellitus, neutropenia or those undergoing corticosteroid therapy are also known to be the lesser common targets[5]. However, Systemic wise, most cases documented in literature were shown to cause CNS abscess commonly, while other manifestations have been seen in cutaneous form[6], pulmonary[7], intra-abdominal infections[8], etc. Furthermore, there has never been a documented case of C. Cladosporioides species to form a soft tissue infection such as a muscle granuloma, deducing our case to have a novel finding. While the mode of transmission for infections affecting deeper organs is hypothesised to be due to hematogenous spread[9], it is believed that cutaneous/subcutaneous Phaeohyphomycosis occurs mainly through random trivial trauma, giving a mode of entry for the Fungus into the Cutaneous/subcutaneous tissue[10].

However, no such etiology was found in our case. The mainstay of treatment of subcutaneous phaeohyphomycosis is surgical excision, with or without antifungal therapy. While Itraconazole is considered to be gold standard in treatment of dematiaceous fungi infections, however due to lack of confirmed literature, its yet to establish its superiority over other antimycotics tested for treating the same such as Amphotericin B, 5-fluorocytosine, ketoconazole and miconazole[11]. For deeper infections such as brain abscesses, several studies have shown that radical surgical resection followed by targeted pharmacological treatment has shown good disease prognosis with promising outcome[12].

CONCLUSION:

Muscle Fungal granuloma is difficult to diagnose due to absence of specific symptoms, and soft tissue tuberculosis becomes the most common differential diagnosis especially in tropical countries like India. There is paucity of data addressing guidelines for the management of the disease. Hence, in majority of cases, the diagnosis gets delayed and becomes evident after microbiological and

histological examination. Complete excision of the infected granuloma combined with antifungal therapy is the treatment of choice to provide a disease free life.

FOOTNOTES:

- Funding: Not required
- Conflict of interest: None to declare
- Ethical approval: Pre-obtained from Institutional ethics and research committee. Informed Consent was taken prior to carrying out this study.

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