Case Report

Cutaneous Phaeohyphomycosis Presenting as a Progressive Disfiguring Lesion of the Face in an Immunocompetent Individual; A Rare Occurrence

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Abstract

Phaeohyphomycosis encompasses many clinical syndromes occurring due to a wide variety of dematiaceous fungi. It can manifest as superficial, cutaneous, subcutaneous, or systemic forms involving the skin, subcutis, paranasal sinuses, or the central nervous system. Subcutaneous phaeohyphomycosis is the most common subtype and occurs due to wound contamination or traumatic inoculation of the saprophytic fungus from soil and vegetation. Multiple cases of subcutaneous phaeohyphomycosis involving the extremities in the form of cystic lesions and abscesses have been reported. However, involvement of the face in the form of a progressive ulcerative and disfiguring lesion in an immunocompetent person is extremely rare. We report a rare case of subcutaneous phaeohyphomycosis presenting as a slowly progressive disfiguring lesion of face.

Keywords: *Dematiaceous fungi, disfiguring lesion of the face, phaeohyphomycosis*

Introduction

Phaeohyphomycosis is caused by dematiaceous (pigmented) fungi which contain melanin in their cell walls and grows in tissues in the form of dark-walled septate mycelium. This mycelial tissue morphology differentiates phaeohyphomycosis from other types of dematiaceous fungi where the tissue morphology of the organism is either a grain, as in mycotic mycetoma, or a sclerotic body, as in chromoblastomycosis.[1] Melanin acts as a virulence factor in these fungi by inhibiting phagocytosis. These saprophytic organisms are widespread in the environment, and are found in soil, wood, and decomposing vegetation and commonly infect humans through traumatic inoculation. They commonly present as solitary subcutaneous cyst or abscess usually sparing the overlying skin.[2] Disseminated infections occur in immunocompromised, involving the paranasal sinuses, eyes, central nervous system, lymph nodes, and bone. Multiple cases of subcutaneous phaeohyphomycosis involving the leg, foot, toes, arm, hand, wrist, waist, or the buttock have been reported from India.[3] However, ulcerative and destructive phaeohyphomycosis with the involvement of face is extremely rare, and very few cases have been reported till date.[1,4]

Case History

A 45-year-old female, farmer by occupation and a resident of Maharashtra presented with a painful, ulcerative, and disfiguring lesion over the right side of the face for 20 years. The lesion started as a pea-sized nodule and gradually progressed with advancing ulceration eroding the right half of the face. The patient gave history of difficulty in phonation and chewing food because of the lesion destroying the right part of her upper and lower lips. She was also severely depressed as she had to face social ostracization because of the disfiguring lesion. There was no antecedent history of trauma or any other comorbidities. Patient had been managed at various centers in the past with multiple medications including, antibiotics and antitubercular therapy with little relief. Examination at presentation revealed an ulcerated plaque with unhealthy granulation tissue and crusts discharging foul smelling pus, destroying the right upper and lower lips, ala of right nose, and the right lower eyelid [Figure 1a and b]. An ulcerated plaque measuring 5 cm × 3 cm was present

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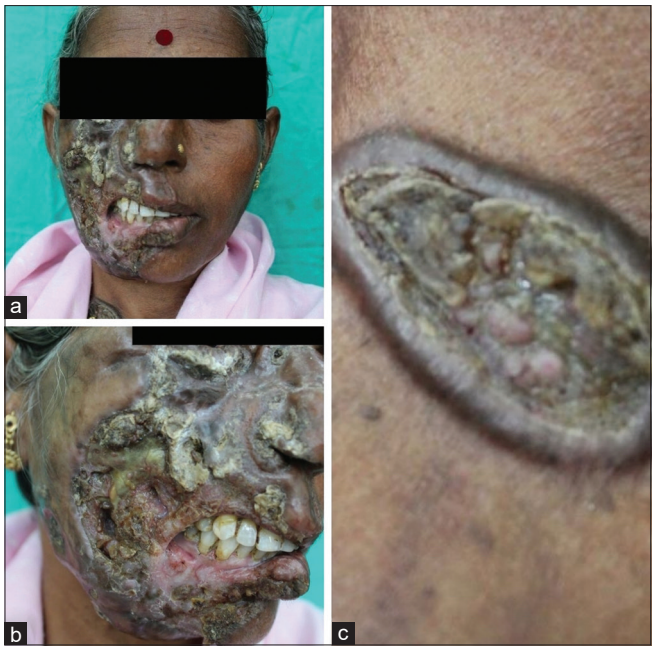

Figure 1: (a): Ulcerated plaque involving the right half of face. (b): Ulceration and scarring destroying the right lower eyelid, ala of right nose, and right upper and lower lip. (c): Ulcerated plaque measuring 5 cm × 3 cm in the right supraclavicular region

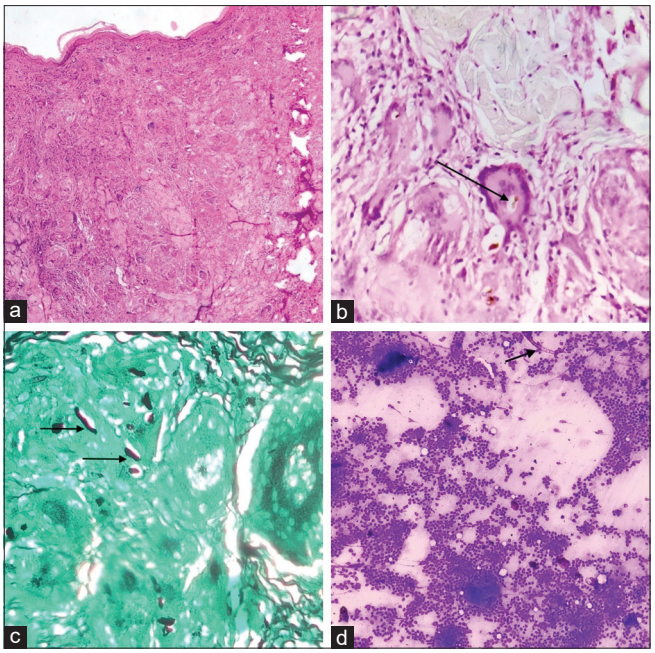

Figure 2: (a): Low power view showing granulomatous inflammation. (H and E,10x). (b): Pigmented fungus seen inside the giant cell denoted by black arrow (H and E,40x). (c): Grocott's methenamine silver stains for fungus revealed brownish black hyphae denoted by a black arrow. (d): FNAC from lymph node showing brownish black hyphae denoted by black arrow (May-Grunwald-Giemsa (MGG),10x))

in the right supraclavicular region [Figure 1c]. Based on history and clinical examination, the patient was evaluated at our center with a differential of deep fungal infection, basal cell carcinoma, ulcerative lupus vulgaris, cutaneous leishmaniasis, sarcoidosis, and lethal midline granuloma. Routine hematological and biochemical parameters were normal. Viral markers including human immunodeficiency virus serology was negative. Haematoxylin and eosin-stained sections from biopsy tissue revealed dense mononuclear inflammatory infiltrate with numerous foreign body giant cells in dermis. Numerous septate branching brown colored organisms were seen both extracellularly and inside giant cells suggesting dematiaceous fungi [Figure 2a and b]. Grocott's methenamine silver stains for fungus revealed brownish black hyphae [Figure 2c]. Fine-needle aspiration cytology was done from enlarged submental lymph node which revealed epithelioid cell granulomas and giant cells with yeast and hyphal forms of fungus among inflammatory cells suggesting the spread of fungus to lymph node [Figure 2d]. The patient was diagnosed as a case of cutaneous phaeohyphomycosis on the basis of dematiaceous fungi seen on histopathology as septate brown-colored organisms. However, the exact etiological agent causing phaeohyphomycosis could not be identified as the fungal culture did not reveal any growth. Magnetic resonance imaging of the face was done to evaluate the extent of lesion which revealed the lesion impinging on the inferior orbital wall superiorly, extending to and eroding the ramus of the mandible inferiorly, crossing the midline of nose medially and laterally extending to the right preauricular region. Mucosal disease was noted in right maxillary sinus. Multiple enlarged cervical and preauricular lymph nodes were noted [Figure 3a and b]. Patient was managed with oral itraconazole 200 mg twice a day and showed good response to therapy with healing of lesions and no further extension [Figure 4a-c]. The treatment was continued for a year and there has been no relapse on follow up. The patient was offered reconstructive surgery but she was unwilling for it.

Discussion

The term "phaeohyphomycosis" was coined by Ajello to cover all cutaneous, subcutaneous, and systemic infections, caused by dematiaceous (melanized) fungi.[5] Although phaeohyphomycosis is often seen in an immunocompromised state or preceded by a history of injury, both these predisposing factors were absent in our case. However, the possibility of a trivial injury could not be excluded as the patient is a farmer.

Melanin is the virulence factor in these fungi and it acts by scavenging free radicals produced by phagocytic cells in the oxidative process. The formation of fungal appressorium, which helps in fungal penetration into the host cell is also influenced by melanin, thereby explaining the pathogenic potential of dematiaceous fungi even in an immunocompetent host.[6] Our patient had a prolonged indolent course of the disease severely destroying facial architecture and was treated on multiple occasions in the past with no relief. Though she underwent multiple biopsies earlier, the fungus was not picked up and she was

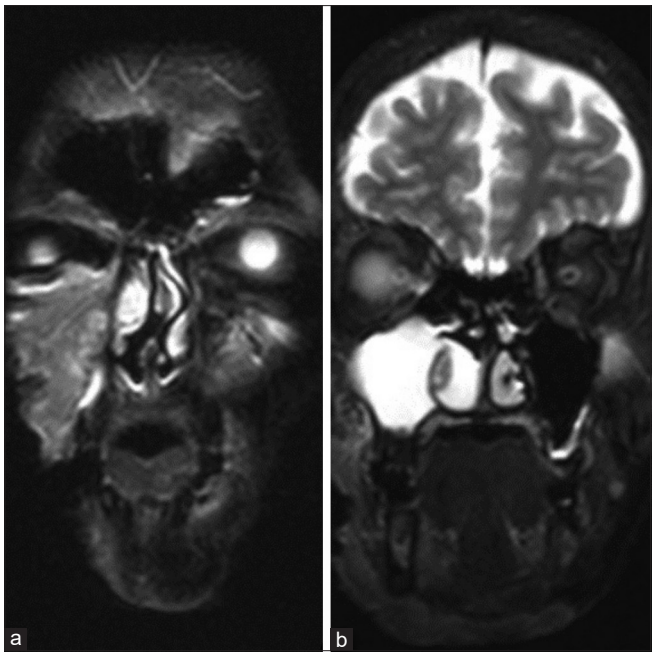

Figure 3: (a): MRI of face showing altered signal intensity lesion over the right cheek involving skin and subcutaneous tissue; isointense on T2 weighted imaging with patchy areas of hyperintensity at periphery. (b): MRI showing mucosal disease in right maxillary sinus

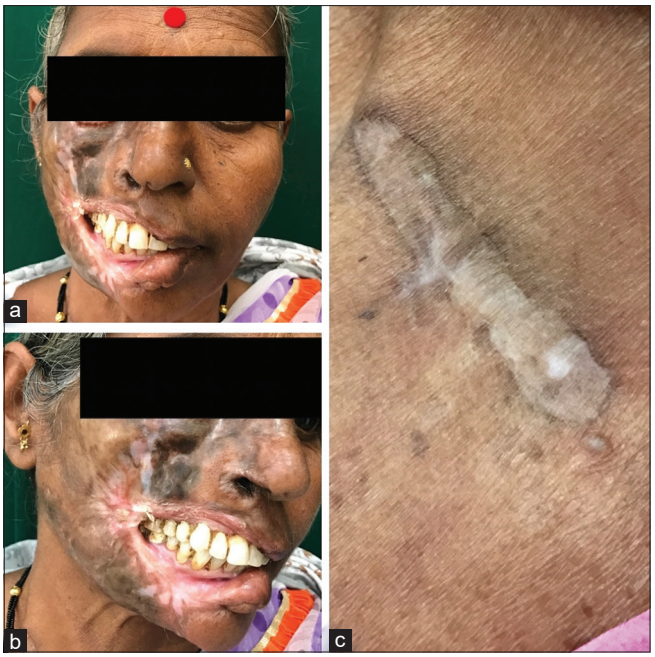

Figure 4: (a): Lesions resolved after antifungal therapy with residual scarring. (b): Lesions resolved after antifungal therapy with residual scarring. (c): Lesions resolved after antifungal therapy with residual scarring

treated for tuberculosis based on granulomatous histology. Histopathology finally clinched the diagnosis in our case showing giant cells with granuloma formation with darkly pigmented fungal elements suggestive of dematiaceous fungi.

The infections due to dematiaceous fungi are classified into two groups based on the morphology in tissues, chromoblastomycosis (which present as muriform bodies in tissues) and phaeohyphomycosis (which present as hyphae or yeast cells or both without any muriform body in tissues). The diagnosis of phaeohyphomycosis in our patient was based on the presence of pigmented hyphae with yeast cells without any muriform body in the tissue.[7] The etiological agents of phaeohyphomycosis include various dematiaceous hyphomycetes belonging to different orders such as Chaetothyriales (Exophiala, Phialophora and Cladophialophora) and Pleosporales (Bipolaris, Exserohilum, Curvularia and Alternaria).[5] Identifying the specific agent has therapeutic importance as different species may have tropism for different organs with varying response to antifungals. We could not speciate the fungus on culture in our patient.

The classical diagnostic modalities of fungal infections based on the histopathological techniques and isolation of fungus in culture have many limitations often delaying the definitive diagnosis. Molecular diagnostics methods in the form of pan fungal real-time PCR assays have emerged recently as a suitable alternative, allowing the amplification of any fungal DNA. These assays have a higher sensitivity as they allow the detection of very small amounts of DNA in clinical samples with the additional benefit of quantifying the fungal burden in clinical specimens.[8] However, this test could not be done in our patient due to the nonavailability of the same at our center.

Azole group of antifungal agents in combination with surgical debridement is the corner stone for the treatment of phaeohyphomycosis. Itraconazole, voriconazole, posaconazole, and caspofungin have shown good results.[9] A number of other treatment modalities including amphotericin B, flucytosine, terbinafine, and griseofulvin, as well as physical treatment methods such as heat and cryosurgery have been utilized in patients with cutaneous phaeohyphomycosis.[10] Our patient received itraconazole for one year and had good improvement with complete resolution of lesions with residual scarring.

Our case underlines the unusual presentation of phaeohyphomycosis involving the face in an immunocompetent individual. There is a need to do multiple biopsies in such cases with special stains to highlight the organism, as a prompt diagnosis can terminate the infection at its outset thereby avoiding its mutilating and disfiguring sequelae.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and

due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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