Scholars Journal of Applied Medical Sciences (SJAMS) **ISSN 2320-6691 (Online)**
Sch. J. App. Med. Sci., 2016; 4(4A):1119-1123 **ISSN 2347-954X (Print)**

(An International Publisher for Academic and Scientific Resources)
www.saspublisher.com

Case Report

Disseminated subcutaneous Phaeohyphomycosis caused by Cladophialophora carrionii – Case Report

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Abstract: Subcutaneous phaeohyphomycosis is chronic fungal infection of the skin & sub cutaneous tissuecaused by darkly pigmented (dematiaceous) fungi and included in Chromomycosis group along with Chromoblastomycosis. In clinically suspected cases of mycotic infection the diagnosis can be confirmed by correlating the results of KOH mount examination of specimens for fungal elements, corresponding histopathology examination and isolation of fungus in culture.Cladophialophora(Cladosporium) carrionii is a recognized agent of Chromomycosis commonly found in tropical & subtropical areas of the world.We report a case of disseminated subcutaneous phaeohyphomycosis confirmed to be caused by Cladophialophora carrionii in a 30 year male farmer.
Keywords: Phaeohyphomycosis, Chromomycosis, Cladophialophora, KOH mount, Sabouraud's dextrose agar

INTRODUCTION:

Phaeohyphomycosis is a distinct mycotic infection of the skin or internal organs caused by darkly pigmented (dematiaceous) fungi, which are widely distributed in the environment. Phaeohyphomycosis is most frequently an opportunistic infection in immunosuppressed patientsor is frequently associated with chronic diseases and diabetes. Rarely, immunocompetent patients may be affected [1]. Phaeohyphomycosis include localized or systemic infections. The sites of lesions may be cutaneous, subcutaneous, deeper tissues or organs like brain or lung [2]. Phaeohyphomycosis involving deeper tissues or organs like brain, lung is generally seen in debilitated or immuno deficient hosts. Chromomycosis occurs as a result of traumatic inoculation of the saprophytic pigmented fungi from decaying vegetation or rotting wood primarily into the skin and sub cutaneous tissue [3]. Most common aetiological agents include slow growing dematiaceous fungi -Cladophialophora (Cladosporium) carrionii, Cladophialophora (Xylohypha) bantiana, Phialophora verrucosa, Phialophorarichardsiae, Fonseceaepedrosoi and less frequently Exophiala species and Wangiella species [4]. Hyperplasia of epidermis of the skin in the lesions may be mistaken for squamous cell carcinoma.Culture isolate should be interpreted in conjunction with the direct microscopy, histopathologic examination and discussion with the clinician in establishing the diagnosis of mycotic infection [2].

CASE REPORT:

A 30 year male farmer involved in climbing trees to pluck dates attended Dermatology outpatient clinic with complaint of raised itchy lesions over the body since eight months. Multiple well circumscribed hyper pigmented plaques of varying sizes from 6 x 7 cms to 2 x 2 cms with verrucous surface having central hypopigmentation & atrophy were distributed over both extremities, abdomen & back (Fig.1). On palpation they were non tender & indurated suggesting involvement of sub cutaneous tissue.

Fig 1: Hyper pigmented verrucous plaques of varying sizes with central hypo pigmentation distributed over abdomen & lower extremity.

The present illness started initially on right hand as a small nodule 8 months back, gradually increased in size and resulted in ulcer oozing pus. Similar lesions occurred gradually on forearm, back, abdomen and legs. Palms & soles were spared. No history of fever but history of thorn pricks at work was present along with history of not responding to systemic and local antibiotic treatment. On general examination discrete, non tender, soft inguinal lymphadenopathy was observed and no other significant condition was observed.

Laboratory work up included complete blood picture, blood sugar, renal function tests, liver function test, HIV screening and Mantoux test. All the results were within normal limits. Pus collected with swabs was examined microscopically by Gram's staining, ZN staining and 10% KOH mount and cultured for bacteria & fungi. No significant observation was noted in direct microscopy of the pus specimen.

Punch biopsy specimen from lesion on abdomen was collected by clinician and subjected to Histopathology examination and Microbiologic examination by direct microscopy, bacterial culture and mycotic culture. Branching septate dark hyphae were observed in 10% KOH mount (Fig.2). Mild orthokeratosis with preserved basal cell layer in epidermis and moderate lymphocyte, plasma cell &histiocyte infiltration in the interstitium& perivascular area in dermis were the findings given in Histopathology report inferring as possible infectious aetiology. No immune deposits were found in immuno fluorescent study.

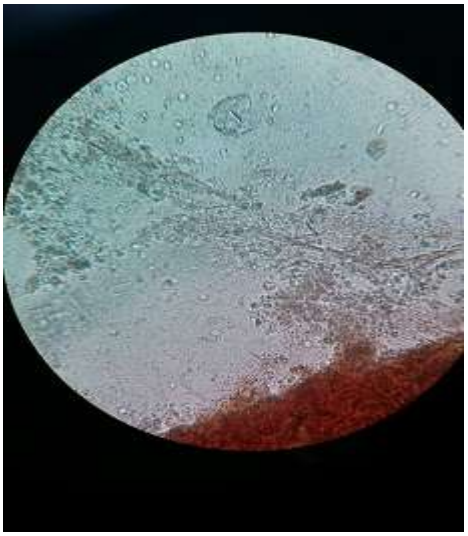

Fig 2: 10% KOH mounts of punch biopsy specimen showing branching hyphae. 40 x magnifications

Fig 3: Sabouraud Dextrose Agar slant showing black velvety growth after 7 days incubation at 25^0C

Bacterial culture on blood agar and Mac Conkey agar was sterile for both pus and punch biopsy specimens. On Sabouraud's Dextrose agar with cycloheximide& chloramphenicol, both the specimens showed black velvety fungalgrowth (Fig. 3) after 7 days of incubation at 25^0 C & reverse was also showing black pigment. Colonies were slow growing and matured in 15 days. Microscopic examination of Lacto phenol cotton blue mount of the isolate showed branching hyaline to brown septate hyphae with chains of elliptical dark staining conidia of cladosporium type sporulation morphologically resembling Cladophialophora (Fig.4).The isolate was unable to grow at 43^0C and liquefied gelatin thus identified as Cladophialophora carrionii.

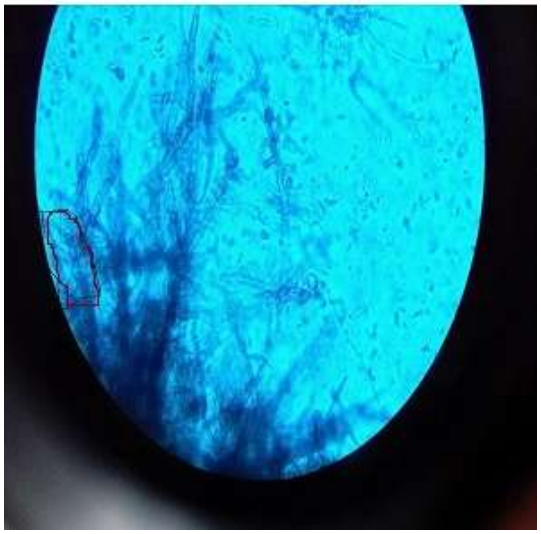

Fig 4: Lactophenol Cotton Blue mounts of fungal isolate showing dark branching septate hyphae with chains of elliptical conidia, 40 x magnifications

Presence of fungal hyphae in KOH mount and absence of sclerotic bodies both in KOH mount and histopathology, isolation of dark pigmented fungi on Sabouraud's Dextrose Agar suggests Phaeohyphomycosis. Oral Itraconazole 200 mg twice daily was prescribed to the patient after explaining the need of prolonged therapy and within 15 days clinical improvement was observed (Fig.5).

Fig 5: Lesions on lower limbs before and 15 days after treatment with Itraconazole

DISCUSSION:

Cladophialophora carrionii is mainly the aetiological agent of chromoblastomycosis and only rarely the cause of phaeohyphomycosis [2]. Chromomycosis is widespread in tropical regions. Cladophialophora is found primarily in arid areas of South America, Africa, and Australia and was first described by Trejos in 1954 under the name Cladosporium carrionii. Recent taxonomic studies have moved pathogenic species of the genus Cladosporium including Cladosporium carrionii, to the genus Cladophialophora, belonging to family Herpotrichiellaceae. Cladophialophora carrionii is considered the most important pathogenic species in this genus due to the many cases of illness caused by this fungus worldwide [5]. In India, two cases of chromoblastomycosis were initially reported from Assam in 1957 by Thomas *et al.;* subsequently, cases were also reported from various regions of the country that included Bihar, Assam, Western and Eastern coasts and the Sub-Himalayan belt [6] and Pondicherry [7]. Subcutaneous phaeohyphomycosis caused by Cladophialophora boppi was reported in India in 2010 [8].

The production of melanin was shown to be involved in pathogenicity. Melanins are pigments of high molecular weight formed by oxidative polymerization of phenolic compounds. They protect fungal cells against fungicidal oxidants by impairing the development of cell mediated response, interfere with complement activation and reduce the susceptibility of pigmented cells to antifungal agents [6]. As fungi grow well at 25^0C, tolerance to human body temperature (37^0C) is an essential requirement for pathogenicity [9].

The genetic diversity and spatial pattern of Cladophialophora and Fonsecaea agents of chromoblastomycosis isolated globally from clinical and environmental samples was studied using two sequence markers; internal transcribed spacer (ITS) region of rDNA and the partial ß-tubulin (BT2) gene, as well as AFLP markers, respectively, to investigate the population structure and differentiation of 73 C. carrionii strains and 60 strains of Fonsecaea species and concluded that these agents of human disease have diverse distribution patterns and population dynamics [10].

Complications of chromomycosis include secondary bacterial infection, ulceration, haematogenous spread to deeper organs - phaeohyphomycosis, squamous carcinoma in chronic

lesions. Host impaired immune system is recorded risk factor for the development of complications [11].

Silva *et al.;* reviewed 325 cases reported in Amazon river drainage region of Brazil, mean age of affected was 41 – 70 years, 93.2% were males, 86.1% were agriculture workers, 80.7% were having lesions on lower limbs and etiologic agent was isolated and identified through culture in 78 cases (24% of cases). Fonseceaepedrosoi was isolated in 77 cases and Phialophora in single case [12]. Similar results were reported by Minotto *et al.;* and recrudescence of the disease was observed in 43% cases [13].

In the present case, history of thorn pricks while tree climbing to pluck dates as part of his occupation was given by the patient after which he developed the papule initially on right hand, gradually increased in size and slowly disseminated to other parts of the body. Laboratory finding of hyphae in 10% KOH mount and absence of sclerotic bodies both in KOH mount and histopathology along with the isolation of pigmented fungi from two different specimens from lesions confirm the diagnosis of Phaeohyphomycosis. Thus physicians should consider subcutaneous phaeohyphomycosis along with chromoblastomycosis in the differential diagnosis of chronic plaques, nodules & cysts in the skin [8, 14].

CONCLUSION:

Penetrating injury was reported in the present immunocompetent case of Phaeohyphomycosis caused by Cladophialophora carrionii. The diagnosis was confirmed by phenotypic identification of the causative fungal isolate and helped in prescribing the relevant antifungal therapy.

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