Indian J Surg 72(Suppl 1): 306–308
DOI: 10.1007/s12262-010-0080-x

CASE REPORT

Primary mucormycosis of abdominal wall : A rare fungal infection in a immunocompetent patient

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Received: 26 November 2009 / Accepted: 20 December 2009

Abstract Mucormycosis of the anterior abdominal wall is an uncommon disease and it is very rare to find this disease in immunocompetent, non-diabetic patients which usually affects patients with trauma, with contaminated wounds, patients with underlying malignancies or patients with immunocompromised state, e.g., diabetics. We herein report a case of primary cutaneous mucormycosis in an immunocompetent and non-diabetic patient. Our patient was a 48-year-old female, executive by profession. She was diagnosed to have cutaneous mucormycosis of the anterior abdominal wall, and was managed with multiple debridements of the wound and intravenous amphotericin B therapy. She was administered a total of 1500 mg of liposomal amphotericin B and when fully healed, split skin grafting was done. We would like to emphasize the importance of high index of suspicion and early start of therapy in a condition with high rate of mortality.

Keywords Mucormycosis · Immunocompetent · Abdominal wall

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Introduction

Mucormycosis is a rare, aggressive, opportunistic infection caused by fungi in the class of Phycomycetes, first described in 1885 by Paltauf [1]. The most common type is orbitorhinocerebral mucormycosis, generally occurring in conjunction with sinus or nasal involvement. We report an extremely rare case of primary mucormycosis infection of the anterior abdominal wall in a immunocompetent patient.

Case report

48 year-old-female, presented to the casualty with a 2 day history of non-passage of stool and abdominal distension. She was admitted in some private hospital 12 days back for same complaints where she was managed symptomatically and was relieved. She gave a history of spider bite over anterior abdominal wall. At that instance, she was again managed non-operatively but the very next day, she presented to the casualty department with complaints of gradually increasing swelling on the anterior abdominal wall associated with pain and persistent fever. She noticed slight swelling over the anterior abdominal wall with small vesicles around it. The swelling was painful, gradually increasing, with tense overlying skin. Her past history revealed that she suffered from typhoid 2 years back, Herpes infection 3 years back and had undergone vaginal hysterectomy 8 years back. There was no history of diabetes, drug abuse or weight loss.

Her fasting blood sugar (109 mg/dl) postprandial blood sugar (126 mg/dl) and glycosylated hemoglobin (HbA1c–5.6%) levels were normal. She was also investigated for HIV status by ELISA for HIV (1 and 2), HIV group O antibodies and HIV-1 Antigen (p24) which were negative. Immunophenotyping(flow cytometry), HIV/Immunodeficiency panel(CD3/CD4/CD8 counts)

were also done which were within normal limits. On clinical suspicion of necrotising soft tissue infection, immediate surgical debridement was done and tissue sent for histopathological examination. There were large areas of necrotic adipose tissue with purulent discharge. She was treated with antibiotics and daily dressings, but instead of improvement, the black necrotic margins were spreading (Fig. 1). Repeated debridements were done on 4th and 6th post-operative day. On daily dressings, whitish cotton like growth was noted on the surface of previous debrided area with black base. The biopsy report revealed fungal inflammatory reaction of the subcutaneous tissue (Figs. 2 and 3) and based on growth characteristics, was diagnosed as mucormycosis. Fungal smears (KOH preparation) of the tissue showed few aseptate filamentous fungi while the fungal culture confirmed it as absidia sp.

On confirmation, she was put on intravenous liposomal amphotericin-B and problems of anemia, hypokalemia, hypoalbuminemia and raised creatinine levels were managed accordingly. Dressings were continued with povidone-iodine and final debridement and split thickness skin grafting was done after 21 days of first debridement (Fig. 4). Graft take up was adequate and amphotericin-B continued for 1 month and a total of 1.5 g was administered. She was discharged after 31 days and is now doing fine.

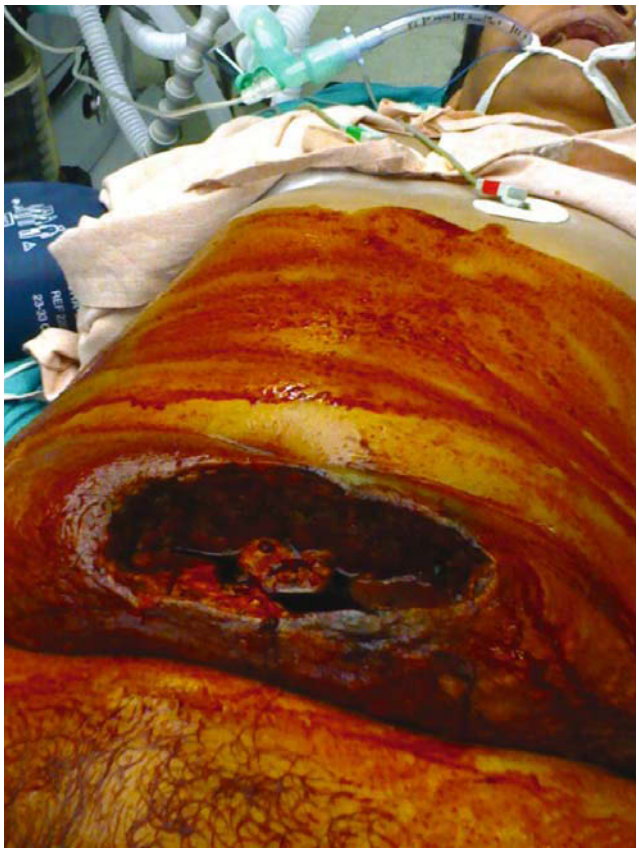

Fig. 1 Photograph taken before the second debridement shows spreading black, necrotic margins. The patient under-went multiple debridements for the same

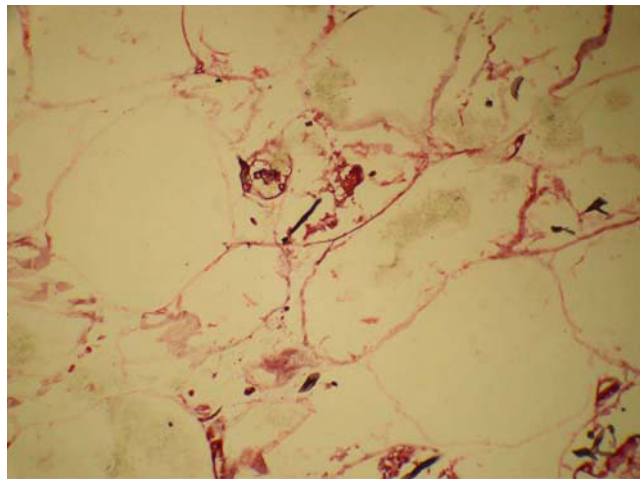

Fig. 2 A high power histopathological photomicrograph of the infected tissue showing few aseptate, branching, filamentous fungi

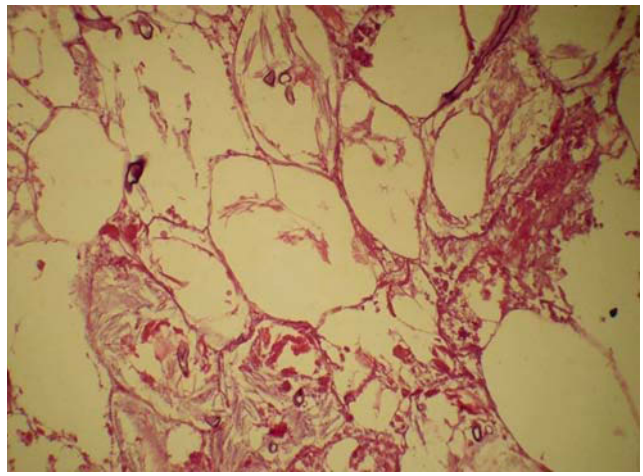

Fig. 3 Photomicrograph showing inflammatory infiltrates in adipose tissue

Discussion

Necrotizing lesions of the anterior abdominal wall are rare. Mucormycosis is an aggressive, rare, opportunistic infection caused by zygomycetes class of fungi, order mucorales. Genera most commonly responsible for mucormycosis usually are Mucor or Rhizopus. The most common type is orbitorhinocerebral mucormycosis, generally occurring in conjunction with sinus or nasal involvement [2]. Primary subcutaneous mucormycosis in humans is limited, in most cases, to patients with severe immunocompromise, diabetes mellitus or trauma [3]. Most are surgical emergencies, however, several cases of a more chronic, indolent form have been reported, with signs and symptoms developing over 4 weeks. The fungi invade the blood vessel lumina and cause thrombosis through inflammatory occlusion and

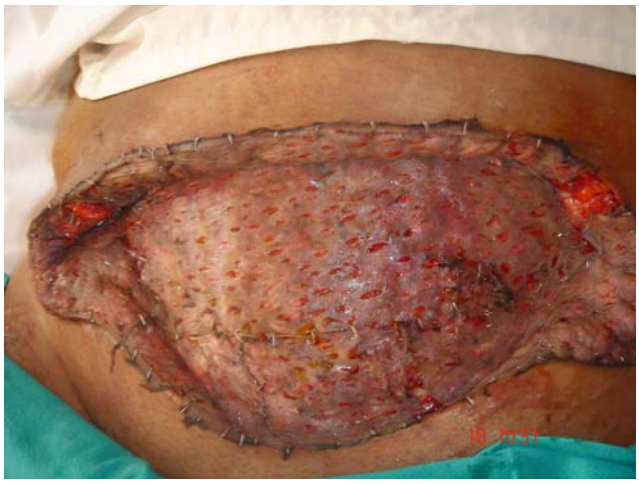

Fig. 4 After the infection was controlled with systemic antifungal therapy, she underwent final debridement and split skin graft on the wound as shown

this is the pathognomic feature of this entity [3]. Scattered case reports of invasive mucormycosis have appeared [4, 5] but the disease in immunocompetent hosts still remains a rarity. There is often a mixed suppurative and necrotising inflammatory reaction in the dermis and subcutaneous tissue [6]. Our patient a young, healthy, immunocompetent woman had massive fungal infection of the anterior abdominal wall. Primary necrotising zygomycosis is usually caused by the traumatic implantation of fungal elements through the skin, especially in patients with extensive burns, diabetes or immunocompromised state. Cases have arisen at insulin injection sites, spider bites, entry sites of intravenous or peritoneal catheters or operative wounds [7–9]. Necrotising cutaneous lesions have occurred in patients who have had contaminated surgical dressings or Elastoplast bandages applied to their skin [10].

In the immunocompetent patient, infections usually remain localized around the site of the initial trauma and respond well to local debridement and antifungal therapy. Cutaneous and subcutaneous zygomycosis may also be the result of hematogenous spread or direct invasion from other organs, and usually indicates a very poor prognosis. The successful management of infections caused by mucoraceous zygomycetes requires an early diagnosis, control or reversal of any predisposing factors or underlying disease, antifungal therapy (amphotericin-B being the drug of choice) [11], and aggressive surgical debridement which may have to be repeated until all infected necrotic tissue is removed. The recent past has seen the introduction of newer antifungals such as posaconazole which has emerged as an important antifungal agent since 2005 [12]. Combinations of antifungal agents such as amphotericin B, liposomal nystatin with granulocyte macrophage-colony stimulating factor and hyperbaric oxygen have been used in the management of rhinocerebral and disseminated mucormycosis [13]. It is also now established that iron metabolism plays a central role and iron chelation using deferiprone is a promising novel therapeutic strategy for refractory mucormycosis [14].

This case is being presented because of its rarity, specially in an immunocompetent host and to emphasize the role of early diagnosis and appropriate treatment, in a life threatening disease.

Conflict of interest The authors do not have any disclosable interest.

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