Cutaneous Zygomycosis – A Devastating Invasive Infection Seen in an Electric Burn Patient
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Abstract

Introduction: Cutaneous zygomycosis is skin manifestation of zygomycosis. It is a rarely seen in immunocompetent patients. It is not commonly seen in Electric Burn patients who are often exposed to numerous infectious sources.

A multidisciplinary approach is crucial for timely diagnosis and treatment as morbidity and mortality can be very high once the disease is acquired. In addition to antifungal therapy, radical debridement and reconstruction by reconstructive surgery is often necessary.

Case history: We here by present a case report of 32 years old immunocompetent male patient, who was an electrician by occupation sustained 20% post burn raw area due to Electric contact and flash Burn while working on high tension wire. Patient was referred to us 47 days after injury from a local hospital. Based on the tissue examination it was diagnosed as cutaneous mucormycosis. The patient was treated with Intravenous and topical Amphotercin B. On 16th day of therapy patient recovered. Further skin grafting and flap coverage of the wounds were done. Patient completely recovered and discharged with minimal morbidity.

Conclusion: The clinical hallmark of mucormycosis is rapid onset of tissue necrosis, with or without fever. The key to successful management is prompt diagnosis, reversal of any underlying predisposing factors, appropriate antifungal therapy and dynamic surgical debridement of infected tissue. In our case a timely intervention saved the patient.

Keywords: Ungal Infection; Mucor; Zygomycosis; Cutaneous Mucormycosis; Invasive Mucormycosis; Electric Burn

Introduction

Zygomycosis is a serious fungal infection caused by a group of molds called zygomycetes. The risk factor for zygomycosis mainly includes uncontrolled diabetes mellitus, prolonged steroid therapy, immunocomprised conditions and burn. It most commonly affects the sinuses or the lungs after inhaling fungal spores from the air, or the skin after the fungus enters the skin through a cut, scrape, burn, or other type of skin trauma. Cutaneous (skin) zygomycosis: occurs after the fungi enter the body through a break in the skin (for example, after surgery, a burn, or other type of skin trauma). This is the most common form of mucormycosis among immunocompetent people [1–3].

Case Report

A 32 year old male was admitted to our burn ward with diagnosis post burn raw area over trunk and right upper limb. This patient had sustained electric contact and flash burn injuries 47 days back involving 20% of total body surface area. This patient was referred to us after initial treatment in his state hospital. The patient had no previous co morbidities and not under any chronic medication. Raw areas over the trunk extending till the back showed extensive subcutaneous necrosis with surrounding inflammation. Patient had high grade fever with chills and rigors also complained of severe pain along the margins of the wound. Patient had already undergone two time debridement in a private hospital before admission and had already received multiple courses of antibiotics and was on IV Meropenem on admission.

During treatment at our hospital, tissue sample was sent for bacterial culture on every 48 hrs. Proteus vulgaris was isolated multiple times and IV antibiotics were started according to sensitivity pattern, but no signs of improvement were observed.

After non response to multiple antibiotics regimens, necrotic skin and subcutaneous tissue all around the wound margins was thoroughly debrided and material was sent for gram staining , ZN staining, KOH preparation as well as bacterial and fungal cultures. ZN staining was negative for acid fast bacilli, gram stain revealed presence of few pus cells with no organisms grown on culture. In the KOH mount broad asepatate hypae were seen which resembles that of zygomycosis. But fungal culture after 14 days of incubation was negative.

Based on these microscopic findings, a diagnosis of cutaneous zygomycosis was made and IV Amphotercin B 0.75mg/kg body weight was started and continued for 16 days. Later after the patients clinically improved, and fever subsided.

Meanwhile potassium supplementation, complete heamogram, liver function tests, serum electrolytes, serum magnesium levels and renal function tests were routinely to monitor the patient simultaneously all nephrotoxic drugs , NSAIDs(Non steroidal anti-inflammatory drugs) were avoided. All other antibiotics were stopped. Necrotising inflammation of the margins reduced drastically within one week of Amphotercin B treatment. Conservative debridement of the necrotic margins was carried out after one week of treatment with Amphotercin B and Split thickness skin grafting was done in the central portion of raw area simultaneously. The graft healed well and second sitting of grafting was done after two weeks of Amphotercin B treatment.

Discussion

Zygomycosis can manifest in different clinical presentations and locations. At least five major forms of infection exist. The most frequent form is the rhinoorbito-cerebral mucormycosis (44–49%), followed by cutaneous mucormycosis (10–19%), pulmonary mucormycosis (10–11%), disseminated mucormycosis (6–11%), gastrointestinal (2–11%), and other rare forms [4].

Cutaneous mucormycosis is a serious fungal infection in burn patients. The common cause mucormycosis are: Rhizopus species, Mucor species, Cunninghamamella bertholletiae, Apophysomyces speci...
Figure 1: Showing the in post burn 2nd week, burn area involving right arm shoulder and right side chest.

Figure 2: The wound size increased extensively now spreading to abdomen, back whole of arm. There is inflammation, induration and nodules in the surrounding areas.

Figure 3: There is extensive subcutaneous necrosis in the adjacent areas with gangrenous changes. On surrounding normal skin, hemorrhagic spots and erythematous nodules can be seen.
Figure 4: After Debridement and Skin Grafting the condition of wound. Gradual healing of wound with decreased inflammation.

Figure 5: Three month post operative the patient with well settled skin grafts.

Figure 6: The KOH mount showing broad asperate hyphae were seen which resembles that of zygomycosis.
es, and Lichtheimia (formerly Absidia) species [5]. Nevertheless, mucormycosis remains an uncommon disease, even in high-risk patients, and represents 8.3%-13% of all fungal infections encountered at autopsy in such patients [6]. Angioinvasion is the clinical feature of invasive mucormycosis. It causes capillary thrombosis which in turn leads to tissue necrosis. This necrosed tissue becomes site for further fungal proliferation. There is extensive subcutaneous necrosis in the adjacent areas with gangrenous changes. This necrosis is always surrounded by erythema and indurations. On surrounding normal skin Hemorrhagic spots and erythematous nodules can be seen [6,7].

Conclusion

These patients should be isolated from the other patients to prevent outbreak in the burn ward. After diagnosis made amphotercin B should be started keeping in mind about its adverse effects. Mortality rates depend on the extent and location of the disease. Cutaneous mucormycosis has the good outcome with 15% associated mortality. Early diagnosis and prompt surgical debridement are pivotal in survival as it is a rapidly spreading disease. In case delay in diagnosis, the extent of the disease increases causing dissemination of the disease and adds mortality [7,8].

Declaration

No animal or human experimentation was done related to this article.

Conflict of Interest

No conflict of interest present.

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References


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