

## STUDY OF FUNGAL INFECTION IN BURN PATIENTS

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### Summary

In a survey of 150 burned patients, only 2 cases were found to be infected with subscar candidiasis and subscar Phycomycosis based on histological and culture result. Colonization of the burned wounds with fungi were seen in a total of 12 patients.

### Introduction

Opportunistic fungal infection is a well-known complication of uncontrolled diabetis melitus, malignant neoplasms, and other debilitating diseases associated with impaired immunologic defense mechanisms (1). While infection with *Pseudomonas aeroginosa* is a major threat in burned patients, these patients are subjected to a wide variety of infectious agents, both bacterial and fungal. (10)

At the present time and due to success in controlling bacterial infection of the burn wounds, Mycotic infection is being recognized with increasing frequencies in sever-



ely burned patients (8).

A variety of fungi may be cultured from burn wounds but the types of fungi that have been encountered most frequently are candida, Geotrichum, Mucor, Aspergillus, Helminthosporium, Fusarium, Rhizopus, Trichosporon, Rhodotorula and Alternaria Sp have also been recorded(1-2). However deep invasion of the burn wound with tissue necrosis, vascular invasion and systemic dissemination is predominantly caused by Phycomycetes or Aspergillus species (1-3-7-11-13).

The main purpose of this paper is to report the results of the study on the frequency and type of the fungi that colonize burned patients in a major Tehran hospital center for the burned patients.

#### Materials and Methods

One hundred and fifty patient with second and third degree burn wound with 10% or more of the body surface who were referred to the Motahari burns Hospital in Tehran were studied during an eight months period beginning on November 1984.

Skin biopsies from various sites of the burn wound, extending well into the subcutaneous fat, were prepared for histologic examination and mycological culture. Biopsies were made during a period ranging from 2 weeks after burn until the healing of the wound either by spontaneous epithelization or by skin grafting. One half of each specimen was fixed in 10% formalin and examined histologically. Section were stained with hematoxylin-eosin and PAS, the other half was cultured on sabouraud's dextrose agar, sabouraud-cycloheximide-chloramphenicol agar, blood agar and Brain-heart infusion agar for mycologic



identification.

Cases report

Case 1-A two year old malnourished girl was admitted to the Mothahari Hospital one day following a 22% flame burn on both feet (Fig. 1)





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Initial Treatment consisted of the administration of fluid and electrolyte, as well as systematic cephalixin, gentamycin and topical sulfadiazine.

Biopsies of the burn wound, made 30 days past burn revealed subscar candidal infection (Fig. 2) and the culture yielded candida albicans. Blood and urine culture were negative for fungi infection.

After debridment of burn biopsies made of wound was negative on both histological and culture examination.

Fig.1- Patient 1 with subscar candidiasis.

Fig.2- Budding yeast and hyphae are seen in the derm and invading to subcutaneous tissue (PAS x 1000).

Case 2-A 13 year old female sustained 40% total body surface burns in a home gas container explosion was admitted to Mothahari hospital. The areas of injury were the both feet. Ampicillin and Topical flamazine were started on admission. Biopsies of the burn wound performed 20 days past-burn revealed large non septate hyphae (Fig. 3) which was later identified as mucor species both on histology and tissue culture.

Fig.3- broad and nonseptate hyphae were seen in the middle derm and hypoderm (H&E x 1000)

### Results

Of the 150 patients studied 92 were males (61,3%) and 58 were females (38,7%).

Of the 150 biopsies made, only 2 were postive both on histological and culture examination and 12 were positive only on the culture.

The distribution is show in table one:

Candida tropicalis	4
" albicans	3
" parakrusei	1
" pseudotropicalis	1
Trichosporun penicillatum	1
Mucor spp	1
Fusarium spp	1

### Discussion

Fungal colonization and infection of the burn wound is associated with the use of the Topical antibacterial agent (4-12). Although not very significant from the clinical point of view, fungal infection might become a precursor of invasive fungal infection and potentially treathening. (9)

A reported from Boston city Hospital indicates that only one of the 151 patients in whom candida organism were identified had systemic infection (6).

In the present study, one case of candida infection was detected not to invaded the subcutaneous tissue, may be due to extensive debridement of the wound. In other cases the causative organism was found to be phycomycete. Phycomycotic group of fungi, which include Mucor and Rhizopus Sp., are significant invasive pathogens (5) which initially colonizes the surface of the burn wound and then extends into viable subcutaneous fat and invade the vessels, producing thrombosis and tissue necrosis(1).



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In our case, the fungi was eradicated by debridement before it could invade to the viable subcutaneous tissues.

Among the 12 colonization cases 10 were positive for yeast and 2 cases for fungi.

In a study at the US army institute of surgical research covering 70 burn patients, 26 patients burn wound was colonized with fungi and the organism isolated most commonly were candida sp(12).

### Resumé

Dans une surveillance basee sur l'etude histologique et la culture qui a ete entreprise chez 150 brules, 2 cas de candidose et phycomyose sous escarienne ont ete deceles. La colonization de mycose dans les lesions de la brulure a ete observe chez un total de 12 malades.

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