

# Cryptococcus neoformans Isolated from burn Patients in Burn Hospital in Baghdad.

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## Summary:

**Background:** wound infections are associated with increased morbidity and mortality. Etiologic agents of wound infections vary with geographical location

**Objective:** This study presents Cryptococcus neoformans and their Characteristics identified from burn patients at a major Iraqi Specialized Burn Hospital.

**Patients and Methods:** All burn patients admitted to Specialized Burn Hospital from November 2011 to May 2012. Once fungal infection was suspected clinically, swabs were harvested for the culture of yeast. The sensitivities of the identified yeast were determined and the positive samples and cases were analyzed.

**Result:** The most predominant yeast isolates was Candida species which represented (56.94%), followed by Cryptococcus species (27.77%) . Twenty fungal cultures were positive for Cryptococcus species. Cryptococcus neoformans was recorded higher percentages 8 (11.11%) follows by Cryptococcus laurentii 6 (8.33%), Cryptococcus albidus 4 (5.55%) and Cryptococcus humicola 2 ( 2.77%).

**Conclusion:** Cryptococcus species isolated from burn patient in a Burn Hospital in Baghdad were identified.

**Keyword:** Fungal infection, Cryptococcus, Burn wound.

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## Introduction:

Species belonging to the Cryptococcus genus are widely distributed in nature. Cryptococcus species can be isolated from various environmental sources such as air, soil, bird excreta, water, animals and decomposing woods (1). Within the genus, only a few species are considered medically important and these appear to have different characteristics that confer virulence (2). The species mainly responsible for disease in man and animals are Cryptococcus neoformans and Cryptococcus gattii (3).

Fungal infection is a common problem in burn patients who present impaired immune resistance and receive broad antibiotic therapy (4). Burned patients may acquire fungal infection from the surrounding environment in the burn care unit. On the other hands patients infected with fungi may disseminate these agents to their surroundings (5).

## Material and Methods:

All samples were collected from patients admitted to the Specialized Burn Hospital, Baghdad, IRAQ, from November 2011 to May 2012.

For mycological analysis, one swab was used to detect the

presence of any yeast by Gram staining, while the other one was used to test growth of fungi on Sabouraud s' Dextrose agar supplemented with gentamicin and chloramphenical . Fungal cultures were obtained at 37C° and observed daily for 20 days. The characterization of fungi was done by morphological examination , India ink films and automated method Vitek YBC yeast identification system ( bio Merieux Vitek , Inc ., MI, VS )(6) .

**Statistical Analysis:** Statistical significance was assessed by using least significant differences – LSD (T-test) P – value  $\leq$  0.05 was considered significance.

## Result:

One hundred and thirty patients were examined for fungal infection. Which include (134) swabs. Seventy two positive cultures were recorded for fungi. Cryptococcus species were recorded twenty isolates among positive fungal culture, which include Cryptococcus neoformans 8(11.11%) isolates, followed by Cryptococcus laurentii 6 (8.33%) isolates, Cryptococcus albidus 4(5.55%) Isolates and Cryptococcus humicola 2(2.77%) isolates (table 1 and 2).

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**Table (1): Distribution of fungal isolates been isolated from patient with burn wounds.**

Fungal isolates	Number	Percentage %
Candida spp.	41	56.94
Cryptococcus spp.	20	27.77
Other fungi	11	15.27
Total	72	100

**Table (2): Distribution of Cryptococcus species among patient with burn wounds.**

Isolates	No. of Isolates	Percentage %
Cryptococcus neoformans	8	11.11
Cryptococcus laurentii	6	8.33
Cryptococcus albidus	4	5.55
Cryptococcus humicola	2	2.77
Total	20	27.77%

**Discussion:**

The majority of patients with fungal infection who came to physicians or who are encountered in the hospital have serious illness, which includes weight loss, depression, fever, chill, sweating. Patients that do not respond to antibacterial treatment and have at least two weeks duration time are considered to have fungal infection (7). Postburn fungal infection colonization of fungus is found more commonly after third week postburn (8).

In this study *Cryptococcus neoformans* recorded higher percentage among *Cryptococcus* species in patients with burn wounds. This indicate a potential risk of acquiring fungal infection from the immediate surroundings in specialized burn Hospital. This support the findings of others (9,10,11).

Other fungi including (*Aspergillus*, *Penicillium*, *Fusarium* and *Zygomycetes* spp.) were found more commonly in burn wards and all of these fungi were previously reported to be causative agents of burn wound infection (12 – 15).

The humidity and hot weather in Baghdad City almost certainly supports growth and dissemination of fungi in the burn unit and burned patients. It has been previously reported that the main pathogenic fungal types are *Candida*, *Aspergillus* and *Cryptococcus* in burn wounds (16, 17, and 18). Although *Candida* was reported as the most common fungus of invasive infection some decades ago, more fungal

strains and pathogenic fungi such as strain of yeast, and other have been isolated in invasive fungal infection in recent years (19,20,21). For example Cawley, M.J. et al describe the first report of Pharmacological management of invasive *Trichosporon beigelii* with a combination of Amphotericin-B and high dose Fluconazole in burn patients.

Fortunately, majority of the yeast strains found from burn patients in our study were sensitive to most antimycotics used.

**Author Contributions:**

*Study conception and design:* Inaam, Sudad, Dr. Tawfeq.

*Acquisition of data:* Inaam, Dr. Jassem.

*Analysis and interpretation of data:* Dr. Tawfeq, Sudad.

*Drafting of manuscript:* Inaam, Dr. Jassem.

*Critical revision:* Inaam, Dr. Tawfeq, Dr. Jassem, Sudad.

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