



## STUDY OF PATTERN OF INFECTION IN BURN WOUNDS IN A TERTIARY CARE HOSPITAL IN UJJAIN CITY

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### ABSTRACT

Infection is the commonest and the most serious problem in patients who survive the shock phase of major thermal injury. It is the most important cause of mortality and morbidity in burn patients. The present paper attempts to study the bacterial profile of burn wounds. One hundred and fifty patients admitted with burn injury were studied. Patients received routine resuscitation and local wound care. A surface swab specimen was collected for bacterial culture and sensitivity test. Total 510 swab cultures were obtained. Among 510 positive swab cultures obtained, Pseudomonas (48.62%) was the most frequent single organism isolated and gram negative organisms (76.87%) outnumbered the gram positive ones (23.13%). This study proved that Pseudomonas was the commonest single organism isolated, and gram negative organisms exceeded the gram positive ones.

**Key Words:** Infection, burn wounds, tertiary care hospital, ujjain city.



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## INTRODUCTION

Infection is a common and most serious problem in patients who survive the shock phase of major thermal injury. With the decline of "Shock" as a major cause of early death, infection has become the most important cause of mortality and morbidity in burn patients. A number of dose related factors like loss of barrier functions of skin, protein rich fluid with certain amount of dead tissue providing ideal environment for microbial growth, dose related immune suppression of specific and non specific immune systems, relative avascularity of burn sites making them non-accessible to most of the systemic antibiotics etc, makes the patient highly susceptible to development of burn sepsis.

## MATERIAL AND METHODS

The patients admitted in R. D. Gardi medical college with burns constituted the material for the study. One hundred and fifty patients were studied. Patients received routine resuscitation and local wound care. A surface swab specimen was collected for bacterial culture and sensitivity test by rolling the swab over the surface of wound after cleaning the wound with normal saline to remove topical antibiotic agent used. The swabs were taken on the day of admission, 3rd day, 8th day and subsequently at weekly intervals. Efforts were made to examine and inoculate as soon as possible after collection to avoid drying of collected material. The swabs were processed by standard microbiological techniques for

aerobic and anaerobic organisms and for determination of their antibiotic sensitivity patterns. When no growth was obtained in culture for 48 hours, it was taken as negative.

## RESULTS

Among 150 cases, 82(54.6%) were females and 68(45.4%) were males. They ranged in age from 3 to 65 years, with highest incidence in children below 10 years of age (35.5%) followed by young adults between 11-30 years. (30.5%) In the present series, a vast majority of cases (about 90%) were below 35% of total body surface area. 56 cases (37.33%) had superficial burns, 24 cases (16%) had deep burns and rest 70 cases (46.66%) had both superficial and deep burns. Initially, on the first day most of the burn injuries were sterile with only 12% of the total swab cultures were positive. On the third day there was spurt in number of positive cultures with 70% of total swab cultures becoming positive but subsequently, there was progressive reduction in number of positive cultures with passage of time because of use of topical chemotherapeutic agent. Table 1 shows bacterial profile of burn wounds in the present series. Among 510 positive swab cultures obtained, Pseudomonas (48.62%) was the most frequent single organism isolated followed by Staphylococci (21.17%). The gram negative organisms (76.87%) outnumbered the gram positive ones (23.13%).

**Table -1**

***Pattern of bacterial infection in burn wounds ( Total number of positive swab cultures -510)***

<b>Organisms</b>	<b>Number</b>	<b>%</b>
Pseudomonas	248	48.62%
Staphylococci	108	21.17%
E. Coli	68	13.33 %
Klebsiella	56	10.98
Proteus	20	3.92%
Streptococcus	10	1.96%

## DISCUSSION

Female preponderance in burn patients in India may be due to their confinement to the home, their loose outfits and unfortunate practice of bride-burning for dowry. We found that to start with, the burn wounds were mostly sterile as surface microbial are destroyed by heat. But they get rapidly colonised within 24 hours because of which a spurt was noted in positive cultures on third day. Burn wound sepsis occurs most frequently in cases of extensive deep burns but it is also a complication of partial thickness burn and may convert superficial burns into deeper ones by causing further destruction of surviving tissue.

According to Karyoute (1) history indicates that the relative importance and cyclical pathogenicity of various microbials has changed and may be expected to change as systemic and topical treatment evolves. Initially staphylococcus was the commonest isolate with gram negatives a somewhat distant second. Young (2) observed progressively changing profile of wound flora. Tahlan et al (3) found pseudomonas as the most common organism followed by staphylococci in their study. Lawrence (4)) reported higher incidence of gram negative

bacteria than gram positive ones as noted in present study. Gupta et al (5) also noted staphylococci as the single most frequent isolate but gram positive ones being surpassed by gram negative. Sharma (6) found that pseudomonas was the common most bacteria that were isolated in burn wounds. Agnihotri (7) also noted pseudomonas as predominant bacteria isolated from burn wounds. Introduction of penicillin has led to infrequent isolation of highly pathogenic streptococci.

## CONCLUSION

The 150 cases of burn wounds were evaluated by surface swab cultures. Pseudomonas was the commonest single organism isolated, and gram negatives exceeded the gram positive ones.

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