



## BACTERIAL ISOLATES FROM BURN WOUND INFECTIONS IN A TERTIARY HEALTH CENTRE IN INDIA.

### Plastic Surgery

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### ABSTRACT

**Background:** Infection is an important cause of mortality in burns. Rapidly emerging nosocomial pathogens and the problem of multi-drug resistance necessitates periodic review of isolation patterns in the burn ward.

**Aim:** Keeping this in mind, the present retrospective study from wounds of patients admitted to burns unit was undertaken to determine the bacteriological profile from the patients admitted in burn ward over a period of three years (Dec 2015 to Nov 2018).

**Materials and Methods:** Bacterial isolates from 243 wound swabs taken from burn patients were identified by conventional biochemical methods and bacterial isolates analysed.

**Results and Conclusions:** During the period from dec 2015 to nov 2018 *Pseudomonas* species was the commonest pathogen isolated (50 %) followed by *Acinetobacter* species (20.45 %), *Staph. aureus* (14.55 %), *Klebsiella* species (25 %) and *Proteus* species (3.63 %). When compared with similar studies, *Pseudomonas* species was still the commonest pathogen in the burns unit but with alarming rise in *Acinetobacter* infections.

### KEYWORDS

Antibiotics, burn, infections

### INTRODUCTION:

Infection is an important cause of mortality in burns. It has been estimated that 75% of all deaths following thermal injuries are related to infections.<sup>[1]</sup> The rate of nosocomial infections are higher in burn patients due to various factors like nature of burn injury itself, immunocompromised status of the patient, invasive diagnostic and therapeutic procedures, prolonged ICU stay,<sup>[2]</sup> and cross infection.<sup>[3]</sup>

There are many challenges in treatment of burns due to changing bacterial isolates with time and geographical area<sup>[4]</sup>, recent increase in *Acinetobacter* infection<sup>[5]</sup> and problem of multi-drug resistance in gram-negative bacilli due to extended spectrum beta lactamases (ESBL) production.<sup>[6]</sup>

This necessitates periodic review of the isolation pattern and antibiogram of the burn ward, which forms the basis for modification of drug regimen strategy. Keeping this in mind, the present study was planned to determine the bacteriological profile in our burn ward over a period of three years (dec 2015 to nov 2018).

### MATERIAL AND METHODS:

This is a retrospective study of bacterial isolates from 243 wound swabs taken from burn patients admitted to the burn unit of the Nalanda medical college and hospital, patna, bihar, india from December 2015 to November 2019. The specimens were sent to microbiology department of the hospital for standardized analysis of bacterial isolates.

### RESULTS:

Bacterial isolates were found in 220 (90.53%) samples and only 23 wound swabs were sterile (10.45%). *Pseudomonas* species was the commonest pathogen isolated (50%) followed by *Acinetobacter* species (20.45%), *Staphylococcus aureus* (14.55%), *Klebsiella* species (11.36%) and *Proteus* species (3.63%) as shown in table - 1.

**Table 1:**

| Name of bacteria     | No.(n) | Percentage |
|----------------------|--------|------------|
| <i>Pseudomonas</i>   | 110    | 50%        |
| <i>Acinetobacter</i> | 45     | 20.45%     |
| <i>Staph. Aureus</i> | 32     | 14.55%     |
| <i>Klebsiella</i>    | 25     | 11.36%     |
| <i>Proteus</i>       | 8      | 3.63%      |

### DISCUSSION:

In the present study, the most commonly isolated organisms from burn patients were *Pseudomonas* species followed by *Staph. aureus* and *Klebsiella* species. These results are in accordance with other studies.<sup>[6],[7],[8]</sup> There was a surprisingly high isolates of *Acinetobacter* species in our study in accordance with Sengupta et al.<sup>[9]</sup> *Acinetobacter* species

are emerging as an important cause of nosocomial infection in burn units. There are a number of factors which may contribute to this increase, viz; its presence as a normal skin commensal and its easy spread due to multi drug resistance in a hospital setting.<sup>[10]</sup>

Such high antimicrobial resistance is probably promoted due to selective pressure exerted on bacteria due to numerous reasons like non adherence to hospital antibiotic policy, and excessive and indiscriminate use of broad-spectrum antibiotics. These multi drug resistant strains establish themselves in the hospital environment in areas like sinks, taps, railing, mattress, toilets and thereby spread from one patient to another. To conclude, routine microbiological surveillance and careful in vitro testing prior to antibiotic use and strict adherence to hospital antibiotic policy may help in the prevention and treatment of multi-drug resistant pathogens in burn infection.

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