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Early Surgical Management Of Burn Wound Infection- A Case Report.

Kiran Madhusudhan[1]*, B Madhusudhan[2], and Pujita B[2].

[1]Department of Microbiology, Sree Balaji Medical College & Hospital, Bharath University, Chennai-44, Tamil Nadu, India.
[2]Department of Surgery, B.R.S. Hospital Pvt. Ltd, Chennai-34, Tamil Nadu, India.

ABSTRACT

Infection remains the most important cause of morbidity and mortality in burns patients. A diagnosis of burn wound infection relies on the demonstration of high bacterial count of more than 10^5 bacteria per gram of tissue, most being multidrug resistant disrobes. Here is a case of a 55 year old diabetic woman, admitted with second and third degree burns on the posterior aspect of left thigh and leg. She underwent extensive wound debridement and one surface culture showed Pseudomonas aeruginosa. Under suitable antibiotic cover escharectomy and split skin grafting was done.

Keywords: Burn wound infection, Multidrug resistant, Pseudomonas aeruginosa, Pus culture, Escharectomy, Split skin graft.

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Corresponding author

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INTRODUCTION

Invasive infection is the chief reason for death and morbidity after burn injury, and is responsible for more than 50 % of the deaths [1, 2]. It is a surgical emergency because of high concentrations of bacteria (>10^5 CFU) in the burn wound and surrounding area, together with new areas of necrosis in unburned tissues. Specimens of this tissue must undergo histology and microbiologic analysis to assist in the identification of the causative organism. Burn wound colonization may be diagnosed when bacteria are present at low concentrations (<10^5 colony forming units (CFU)) on the wound surface. Infection is defined as presence of high concentrations (10^5 organisms / gm of tissue).Patients with delay in presentation or removal of burnt tissues are at a greater risk of developing sepsis [3, 4, 5].

Depending on the severity of burn wound, the depth of skin and soft tissue involvement, burn wound treatments range from simple dressing to extensive surgical intervention. Burn wound infections are commonly caused by Gram positive cases (early stage) followed bacteria, by Gram negative bacilli (late stage), fungi, moulds and rarely viruses belonging to Herpes family [5- 9]. These microorganisms are acquired endogenously from the patient or exogenously from the surroundings. Loss of primary host defense mechanisms along with associated disease conditions such as uncontrolled diabetes, increase chances of burn wound infection and sepsis, generally represented by a quantitative increase in bacteria to more than 10^5 per gram tissue.

CASE REPORT

A 55 year old diabetic woman came to the surgical OP with C/o pain and swelling on the back of her left thigh and leg. She gave history of accidental burn injury at her residence a week back for which she got treated with topical and oral antibiotics outside. Local examination showed extensive burns (involving skin and soft tissues) of II and II degree, at the back of her left thigh and leg. The wound was covered by eschar and surrounding cellulitis was present. She was admitted for wound debridement, escharectomy and split skin grafting and other supportive care. Her blood and biochemical parameters were normal, with diabetes and hypothyroidism under control. Wound cleaned and swabs were taken from beneath the eschar and sent for culture and sensitivity. Patient was started on appropriate IV antibiotics for Pseudomonas aeruginosa as per the culture report and antibiogram. Blood culture was negative.

Areas with II degree burns were treated with Silver Sulphadiazine (SSD) dressings. Under GA, patient was posted for Escharectomy (Figure 1.) Split screen grafting was taken from the anterior aspect of the right thigh and grafting was done to the raw areas on the patient's left thigh and leg (Figure 2). There was complete uptake of the graft and patient was discharged after one week.

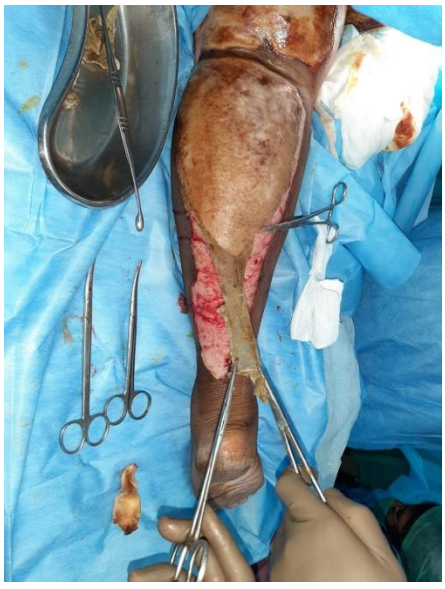

Figure 1: Eschar removal from burn wound on posterior aspect of left thigh and leg.

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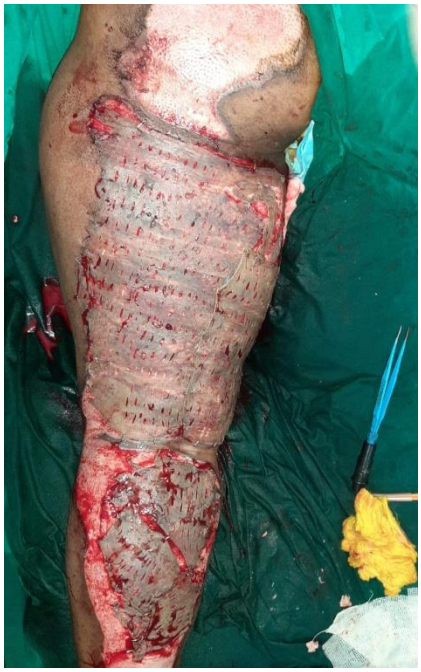

Figure 2. Split skin grafting of III degree burn wound after Eschar removal.

DISCUSSION

Burn injury generally results in a state of immune system dysregulation of innate and adaptive immune response that predisposes patients to infection. Furthermore, inhalation injury, central venous access, arterial lines, urinary catheters and prolonged hospitalization all contribute to increased risk of infection in burn patients [10]. Pathogens of specific concern in burn population include MDR strains of P. aeruginosa, Acinetobacter baumanni ad Sternotrophomonas maltophilia, MRSA and Carbapenam resistant Enterobacteria. Anaerobes such as Bacteroids and Fusobacterium spp. rarely cause infection in burns. The high prevalence of MDR bacteria in burn patients is likely a consequence of several factors, such as high antibiotic pressures, high colonization, intensive medical and surgical therapy and vulnerable immuno-compromised patient population such as diabetics [11].

Quantitative surface swab cultures of burn wound and quantitative tissue biopsy culture show bacterial counts (>10^5/gm of tissue) which are used to define infection [12, 13]. Prevention of spread of MDR bacteria in this population needs to consist of a multipronged approach that includes: hand hygiene, antibacterial stewardship, optimization of surgical interventions and lesser use of invasive medical devices and environmental control. Early treatment in patients with burn wound cellulitis and deeper skin and soft tissue infections, excision of the burn eschar and skin grafting lead to rapid resolution of infection [14].

CONCLUSION

Serious complications can be avoided by practicing strict aseptic techniques in burn wards. Developments in critical care and newer surgical approaches for treating burn wounds together with advanced antimicrobials have reduced significantly the morbidity and mortality rates in these patients. Nevertheless, good infection control measures, constant wound surveillance with regular sampling of tissue for quantitative culture, early excision and wound closure with SSG as in this case, remain the principal adjuvants to control invasive infection in burn patients.

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