

MANAGEMENT OF BURN WOUND

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Abstract

Background: Burn injuries are a severe and devastating form of trauma that affects millions of people worldwide and causes significant economic losses. The success of treatment is difficult to measure, and the burn team must treat the patients as a whole, considering their overall health and rehabilitation needs. This study aimed to initially manage burn wound morbidity in wound infection according to the type of organism, extent of infection treatment, wound healing and contraction, and duration of hospital stay. **Material and Methods:** This study included 50 patients diagnosed with burns who were admitted to the Rajah Muthiah Medical College and Hospital between October 2010 and October 2012. Data on age and sex were collected. Clinical history, physical examination, routine blood investigations, wound C/S, and fluid requirements were collected. Wound infection was assessed and monitored using Print's clinical criteria and surface cultures. **Results:** Nearly 90% of patients admitted to a hospital burn care unit were rural, low-income, and suffered from flame or electrical burns. Most were female with a history of suicidal thoughts or homicides. Most patients initially denied homicidal incidents but were later admitted. The hospital lost significant man-days and human resources because of its prime age group. Proteus organisms and Pseudomonas Klebsiella caused over 60% of infections. **Conclusion:** Burns are common and cause wound infections, higher intravenous fluid requirements, and longer hospital stays. Pain relief is achieved with analgesics and sedatives, and most patients have lower socioeconomic status.

INTRODUCTION

Ever since man discovered the fire, he accidentally burnt himself. India has an ancient culture in which fire is traditionally worshipped. It is probably the potential fury of an unharnessed fire that caused man to bow before it. Burns are among the oldest injuries that man still suffers from. Burn injuries are one of the most serious and devastating forms of trauma that humans can sustain. A burn injury not only destroys the cutaneous barrier but also leads to profound changes in almost all other organ systems so much so, that burn injury has been the "Universal Trauma Model".

Millions of people worldwide are hospitalised for the treatment of burns each year, and thousands die. The daily cost of care for burn patients is high. The economic loss to any nation is staggering and must be measured not only in currency, but also in the permanent loss of millions of productive years. Painful and lengthy hospitalisation, multiple stages of surgery, permanent disfigurement and disability, prolonged rehabilitation, loss of income and job, and enormous financial burden are some of the horrors

looming large over burn victims. The success or failure of burn victims' treatment is difficult to measure.

Survival or death is not necessarily an adequate indicator. Death of the victim with nearly total body surface injury so deep as to preclude full functional recovery may not be considered a failure. Similarly, survival without considering the functional and social rehabilitation of the victim should not be the only measure of success. The burn team must treat the patient as a whole and measure success or failure, not on how they understand and treat the burn, but on how they understand, treat, and rehabilitate the burn patient. Burn wound care is a difficult clinical problem requiring close monitoring and follow-up.

Aim

This study aimed to initially manage burn wound morbidity in wound infection according to the type of organism, extent of infection treatment, wound healing and contraction, and duration of hospital stay.

MATERIALS AND METHODS

This study included 50 patients diagnosed with burns who were admitted to Rajah Muthiah Medical College and Hospital between October 2010 and October 2012. The study was approved by the institutional ethics committee before initiation, and informed consent was obtained from all patients.

Inclusion Criteria

Age, sex, and presence of burns were included.

Exclusion Criteria

Patients aged less than 18 years were excluded from the study.

Data on age and sex were collected. Clinical history, physical examination, routine blood investigations, wound C/S, and fluid requirements were collected.

The fluid requirements of the patients treated in both groups were calculated using Modified Brooke's formula. The calculated and administered fluid requirement was found to be adequate to maintain a urine output of more than 30-50 ml per hour. Wound infection was assessed and monitored using Print's clinical criteria and surface cultures. The biopsy material was sent for both bacteriological and histopathological assessments. The data are expressed as frequencies and percentages.

RESULTS

An analysis of the epidemiological data of burn patients admitted to this hospital since 2010 revealed the following conclusions. Most of the patients (nearly 90%) admitted to the burn care unit of this hospital belonged to the rural folks of Chidambaram and adjacent districts; 95% of the patients treated here belonged to the low economic stratum of society, nearly 90% of the cases were due to flame burns, while the remaining cases were due to electrical burns. In 95% of patients, the mode of sustaining burns was recorded as accidental. The remaining cases were attributed to suicide attempts, 60-65% of the patients were females predominantly in the reproductive age group, and 70-75% of the patients had sustained only < 50% burns.

Most burns in female patients had either a suicidal history or a few homicides. Most homicidal incidents were initially denied by patients, but they later confided the truth. It appears that the reluctance of the patients was due to the consideration of children when the accused was the husband. The number of man-days lost and human resources lost is enormous, considering that most of the patients are in the prime age group. More than 60% of the infections were due to Proteus organisms, followed by Pseudomonas Klebsiella. [Table 1]

Table 1: Demographic data of the study

		Number of cases
Age	18-30	22
	31-40	16
	41-50	5
	51-60	7
	61-70	0
Gender	Male	32
	Female	18
Organism	proteus	32
	Pseudomonas	17
	Klebsiella	1
Extent of burn	<30	28
	30-50%	18
	50-70%	7
Cause	Accidental	95%
	Suicidal	5%

DISCUSSION

The patients were closely monitored during the study, and the observations made during this period were analysed and discussed here.

Pain is an important morbid feature in burn patients, especially in first- and second-degree burns, and almost all patients experience pain during resuscitation. The difference was best observed at 24 h post-burn. In patients, pain relief was variable; few patients had good pain relief following silver sulfadiazine application, while most of the patients (60%) experienced less intensity of pain and irritation but demanded analgesics and sedatives intermittently for a period of approximately 5-7 days and few patients (20%) had no pain relief at all,

demanding pain relief by pharmacological means for more than 10-14 days.

Wound infection was prevalent in almost all patients in both groups. Wound Biopsy was not done in all the cases under study Biopsy was taken only in two patients for sample study. These results are consistent with wound infections. In all patients treated by either method, the infecting organisms were found to belong to the gram-negative group only. They included proteus, Pseudomonas, Klebsiella, and Escherichia coli in descending order of frequency.

Areas of first-degree burns healed rapidly within 4-6 days and epithelialisation was good in patients. Clear granulating wounds were obtained from the areas of second- and third-degree burns, as the infection was well controlled with the judicious use

of antibiotics. All patients were referred to the plastic surgery department for definite wound coverage by skin grafting.

Early wound care with collagen greatly reduced fluid, electrolyte, and protein seepage through the burn wound, dramatic pain relief following collagen application, early ambulation, early start of enteral feeding, delayed and less intense wound infection, good infection control, and shortened wound healing time. This resulted in decreased hospital stay for the patients. The average duration of the hospital stays was 12-20 days.

Limitations

This was a small-sample clinical trial. The conclusions drawn were based purely on the statistical data obtained in the trial. These inferences may require further elucidation through larger clinical trials and follow-up studies.

CONCLUSION

Wound infection is more common, and *Proteus* is the most common organism, followed by *Pseudomonas* and *Klebsiella*. The IV fluid requirement is higher in patients treated with more

than 50% burns. Wound healing is better in patients treated with higher-end antibiotics, and the average duration of hospital stay is 12-20 days. Nearly 90% of burn cases are caused by flame burns, whereas the remainder are caused by electrical burns. 60-65% of females were predominantly in the reproductive age group. Pain relief is dramatic with the use of analgesics and sedatives, and 95% of the patients have a lower socioeconomic status.

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