



Clinical Picture, Management and Outcome in Patients with Burn Injuries

KEYWORDS

Clinical picture, management, outcome, burn injuries

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ABSTRACT

Objective: To study the clinical picture management and outcome in patients with burn injuries. **Material & Methods:** This is a prospective study of 51 patients who presented to the emergency with acute burn injuries. **Results:** 33.33% patients sustained scalds while 31.4% patients had flame burns. 39% patients sustained in between 11 to 30% burns. Out of 123 burn wounds documented in 51 patients 66 were 2nd degree burns. Surgical intervention was needed in 17 patients, a total of 26 procedures were done. 84% of the patients were discharged in satisfactory condition, there was a mortality of 4%. **Conclusion:** Reasonable inpatient burn care, as defined by adequate resuscitation, daily topical dressings, appropriate surgery can go a long way in reducing morbidity & mortality in burns patients

INTRODUCTION

The skin is the largest organ of the body. It functions as a neurosensory organ and protects against the invasion of foreign bodies and organisms. It has specific immune and metabolic functions and is important in regulating body temperature plus fluid, protein, and electrolyte hemostasis. Loss of the functional skin barrier after thermal injury results in increased susceptibility to infection that is the major cause of morbidity and mortality post burn. In addition, factors such as extent and depth of injury, patient age, associated conditions/injuries, and the presence of inhalation injury can adversely affect clinical outcomes. (1)

In a report of May 2012 of the World Health Organization (WHO), an estimated 1,95,000 deaths every year are caused by burns worldwide – a vast majority of which occur in low and middle-income countries. Non-fatal burn injuries are a leading cause of morbidity. Women in the South-East Asian region have the highest rate of burns accounting for 27% of global burn deaths and nearly 70% of burn deaths in the region. In India, over 1 million people are moderately or severely burnt every year.

AIMS AND OBJECTIVES

To study the Clinical picture, management and outcome in patients with burn injuries

MATERIALS AND METHODS

This study was conducted in the Department of Surgery (Plastic Surgery) at Himalayan Institute of Medical Sciences, Swami Ram Nagar, Dehradun over a period of 12 months after taking a written and informed consent from subjects or subjects attendant.

Study Design:

Sample size – In this study, 51 patients with burn injuries were included.

Type of study - It was a prospective observational study.

Selection of Study Subjects:

All patients who were reported to Himalayan Institute Hospital in the Department of Surgery, Plastic Surgery and Emergency, within 1 week of sustaining burn injury.

RESULTS

Figure 1 shows that the highest incidence of burns was due to scalds (17 cases, 33.3%, n = 51) followed closely by flame burns (16 cases, 31.4%, n = 51). Electrical burn injuries had an incidence of 23.6% (12 cases, n = 51) while, the least number of injuries were reported due to contact burns (3 cases, 5.7%, n = 51), flash burns (2 cases, 3.9%, n = 51) and chemical burns (1 case, 1.9%, n = 51).

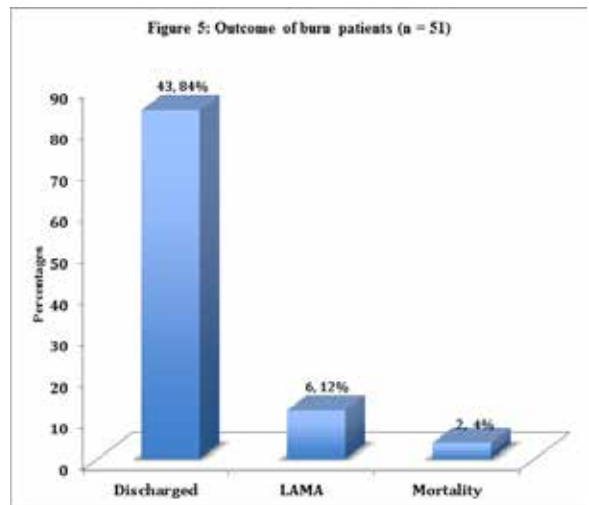
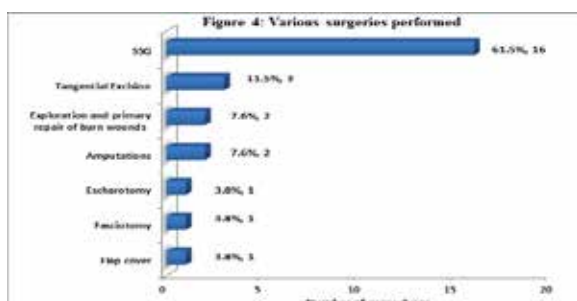
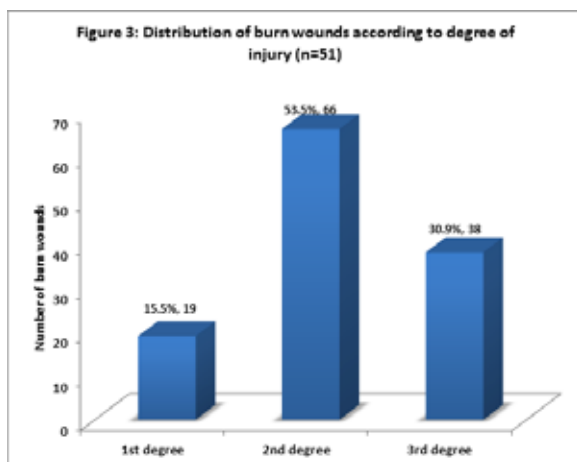
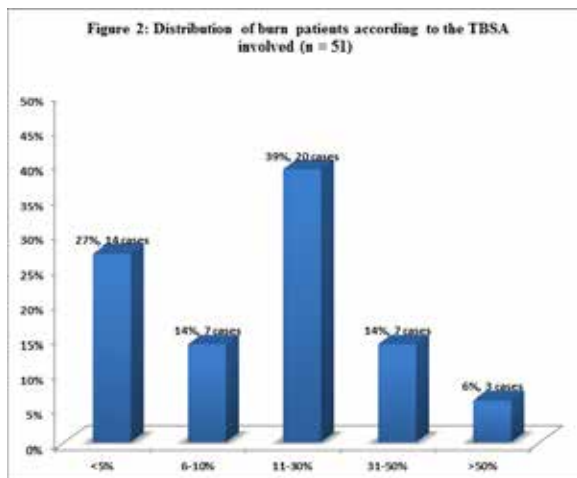
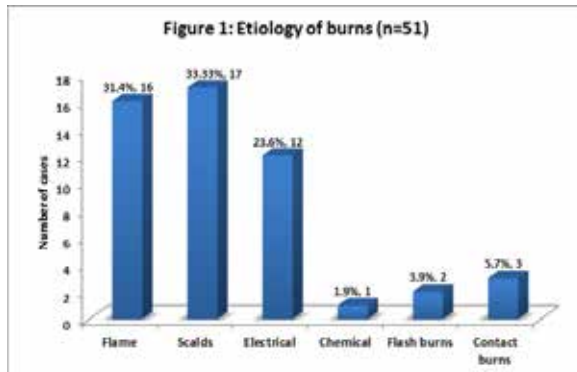
Figure 2 shows a variable distribution of burn victims according to the extent of burn injury % TBSA (Total burn surface area) where the mean TBSA was noted to be 27.38% with a range of 1% to greater than 90% TBSA. Maximum subjects (20, n = 51) had burns involving 11 to 30% of total body surface area, followed by subjects with burns involving less than 5% of total body surface area (14, n = 51), while burns involving 6-10% TBSA and 31-50% TBSA showed an equal distribution (7 cases each n = 51) and lastly burns involving more than 50% TBSA were observed in only 3 cases (n = 51).

Figure 3 depicts a total of 123 burn wounds in all subjects (n = 51) of which 39 had sustained more than one burn wound with varying depth, 12 patients had single burn wound. Out of 123, 19 were I degree, 66 II degree & 38 III degree burn wounds.

Figure 4 shows that surgical intervention was needed in 17 burn victims (n = 51) and a total of 26 procedures were performed. It was observed that maximum procedures performed were split thickness skin grafting (SSG's) over post burn raw areas (16 procedures, in 13 subjects). This was followed by tangential excision of 3rd degree burn area (3 procedures, in 3 subjects). 2 amputations for severe burn injuries in 2 subjects. Excision with repair was done in 2 patients. While one cross finger flap coverage of a post burn raw area over the right index finger of a subject with 3rd degree burn injury to the hand was performed. Similarly, fasciotomy and escharotomy were each performed once in 2 subjects.

Figure 5 shows outcome of all burn subjects 43 patients (n = 51) were discharged in satisfactory condition, 6 patients (n = 51) were discharged against medical advice on

request of the burn victim's families, while 2 cases (n = 51) ended in mortality.



DISCUSSION

The most common cause of burn injury in this study was scalds (33%) followed by flames (31%) & electrical injuries (23%). In the pediatric age group, scalds were the most common cause of injury (61%) followed by flame burns (16.6%). Scald has been reported as the most common type of burn in children from Ethiopia, Hong Kong, India, and Morocco. It is a common practice in low and middle class households to boil water in huge pots which are usually left on kitchen floor for cooling and carelessly running children fall in them in addition to falling into buckets of hot water stored for bathing in bathrooms. (2, 3, 4, 5)

In adults, the predominant causes of injury for the age group 19-30 years were flame (37%) and electrical burns (37%) followed by scalds (25%). In the age group of 31-50yrs, flame burns were the most common cause of injury (53.8%) followed by electrical burns (38.4%) and scalds (7.6%). In elderly individuals, the causative factors were flame burn, scald and flash burns with an equal distribution of 33.33%.

A total of 123 burn injuries were reported in the 51 patients included in this study out of which 29.41% patients had multiple burn injuries of varying depth. There were 18 (14.6%) 1st degree burn injuries, 67 (54.4%) 2nd degree injuries and 38 (30.9%) 3rd degree injuries.

The percent TBSA for burned patients ranged from 1% to 100% with a mean TBSA of 27.4%. In contrast, Ekrami A, et al showed the mean TBSA to be 38.7%. (6). Maximum number of patients (80.1%) had burns ranging between 1% and 30% TBSA, 7 patients (13.7%) with burns ranging between 30%-50% TBSA. In this study, there were only 3 patients with more than 50% TBSA burns where all 3 had suffered severe burn injuries (more than 70% TBSA).

Result of this study showed a relation between mortality and %TBSA involvement. There were 3 patients with over 50% TBSA burns (all 3 patients had burns exceeding 70% TBSA) of which 2 patients died from complications. This was similar to the findings in a study done in Solapur by Subramanayam, which showed that all patients with above 70% TBSA died. (7)

Regarding the surgical management in burn patients, 39 patients (76.5%) underwent surgical debridement/cleansing, with a mean of 6.8 procedures per patient. 4 pa-

tients (7.8%) had 1 debridement, 5 patients (9.8%) had 2 debridements and 30 patients (58.8%) had 3 or more debridements. Sixteen (61.5%) split thickness skin grafts (SSG) were performed in 13 patients. 3 (13.1%) tangential excisions were done for severe 3rd degree burns. Amputations were performed in two patients for gangrene/necrosis, one involving amputation of the right ear of a female patient with chemical burn to the face and the other involving amputation of multiple digits of both lower extremities in a patient with extensive 3rd degree burns. There were 2 subjects with severe burn injuries where excision of burn wounds with repair was performed, Cross finger flap coverage over a post burn raw area of the index finger was performed in 1 patient (3.8%) with severe 3rd degree burns to his right hand followed by subsequent flap inset. Fasciotomy was performed in 1 patient (3.8%) for 3rd degree burn over his right upper extremity and Escharotomy was performed in 1 patient (3.8%) with extensive 3rd degree burns over both upper extremities. In a study at Tenwek Hospital in Korea, 168 patients (63 %) had no SSG's, 71 patients (26 %) had one, 20 patients (7 %) had two, and 9 patients (3 %) had three or more SSG's. Surgical debridement had a similar rate of occurrence: 153 patients (57 %) had no debridement, 72 patients (27 %) had one, 24 patients (9 %) had two, and 18 patients (7 %) had three or more debridements. (8)

In contrast, in a study of 892 burn patients at a hospital in Punjab, four hundred and sixteen patients (46.6%) had their post burn raw areas covered with split skin grafts. Tangential excision and grafting was done in 326 patients (36.5%). Ninety-six patients underwent fasciotomies. 96 patients underwent amputation of upper or lower limbs. (9)

With regard to outcome, 43 out of 51 patients (84.3%) were discharged, Six patients (11.7%) were discharged against medical advice (LAMA) as requested by the burn victim's families which could be attributed to poor socio-economic status of the victims families, while 2 subjects (3.9%) ended in mortality where both patients had more than 80% TBSA burns and died due to complications such as sepsis/ARDS. Different findings were observed in the study of L.M. Bariar, et al who found that 41% patients were discharged, 39.5% patients expired and 19.5% patients left against medical advice (LAMA). (10) The present study findings were similar to the findings of S. Al-Shlash, et al who found that 68.7% patients were discharged with complete cure, 10.8% patients were discharged with functional residual disability. (11)

CONCLUSION

Our study showed that 'reasonable' inpatient burn care, as defined by adequate resuscitation, daily topical dressings, appropriate surgery (escharotomy, debridement, and skin grafting, etc.) can go a long way in reducing morbidity and mortality in burns patients. The social aspect of burn could be taken care of by increasing literacy rates, counseling, appropriate legislations and their proper implementation.

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