

BURNS INJURY IN UNDER 5 YEARS CHILDREN ADMITTED TO BURN AND PLASTIC SURGERY HOSPITAL FROM 2009 TO 2011

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ABSTRACT

Burns are a common cause of preventable injury and most of these injuries are in children under the age of 5 years and have the greatest length of stay for all hospital admission due to injuries. As the Children are not little adults, the symptoms, signs, and management will be completely different. The study was conducted to identify the epidemiological features of burns in children and analysis of the outcome of used management. Retrospective analysis of data of patients files under 5 years old who were admitted to pediatric burn and intensive care unit burn units in Burn and Plastic surgery hospital- Tripoli, in the period between (January 2009 to December 2011). 21% of the total admission were children under 5 years, 85% of those patients were mild to moderate injury and 15% were with severe injury. Male patients represent 61% of the admissions and female patients represent 39% of the admissions. Scald burn represent 69% of cases, fire burn with 14% and the rest because of electrical burn, therefore more cases in winter season. 50% of cases managed surgically with mean duration of stay in hospital 8 days. The study shows 60% of the patients were males, Scald burn injuries are most common, early surgical excision and grafting decline the duration of stay in hospital.

KEYWORDS: Burns, Duration of stay, Early surgical intervention.

INTRODUCTION

Due to their small body weight/surface area ratio and more circulating volume (80 ml/Kg vs 65 ml/kg in adults), fluid losses in children in burn injury are proportionally greater than adult (more than twice)⁽¹⁾. Because the linear relationship between body weight and surface area does not exist in children, use of weight based formula result in under or over resuscitation⁽²⁾. Pediatric burned patients should be resuscitated using formula based on body surface area, which can be calculated from height and weight using standard normogram or formula⁽³⁾. Evaluation of the efficacy of resuscitation is difficult in children because usual signs of hypovolemia are late due to:-

- Large cardiopulmonary reserve
- Require loss of 25% of circulating volume
- Tachycardia often reflex with trivial injury
- Blood pressure commonly low.
- Continued urine production despite hypovolemia⁽⁴⁾.

So, reflective of volume status is:

- Mental clarity
- Pulse pressure
- Arterial blood gasses
- Distal extremity color
- Capillary refilling.
- Body temperature

Finally the smaller aperture of the pediatric trachea predisposes it to increase in resistance & decrease in

cross section area by minimal amount of edema, therefore early intubation is advocate^(5,6).

AIM AND OBJECTIVES OF THE STUDY

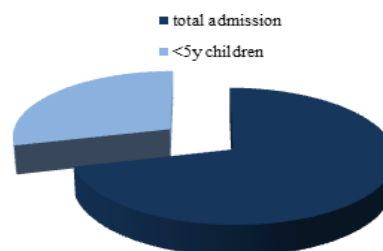
- 1- Identify epidemiological features of burns in children.
- 2- Determine the mechanisms of their lesions.
- 3- Evaluate the outcome of used management.

METHOD & SUBJECTS

Retrospective study of data (patient's files) of patients under 5 years old who were admitted to pediatric burn and ICU burn units in Burn and Plastic Surgery Hospital-Tripoli, ((which is the only specialized hospital in Libya for treating burn injury victims, There is only one burn unit in trauma hospital (Aljala hospital) in eastern side of Libya. Also there is no private hospital dealings with such cases)) In the period between (January 2009 to December 2011), the data includes gender, causes of burn, burn surface, management and duration of hospital stay.

RESULT

Total number of admission to the burn department and ICU burn was 2087 patients, 440 patients were children under 5 years old that represent 21% of the total admission (figure 1).



(Figure 1) Percentage of admitted patients who are under 5y old

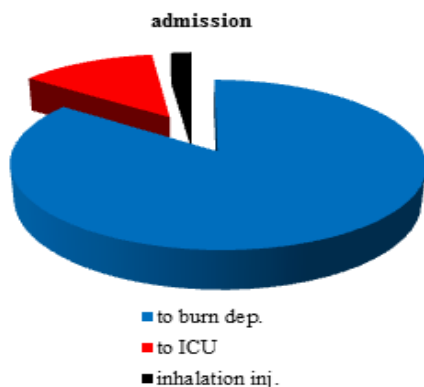
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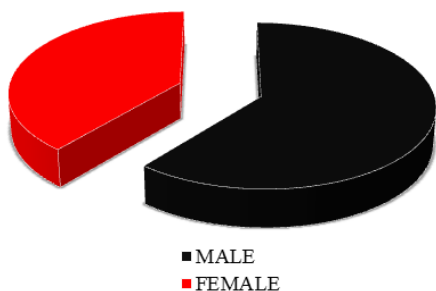
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374 patients out of 440 patients admitted to pediatric burn department, 85% mild to moderate injury (burn surface area less than 25% TBSA), where 66 patients admitted to ICU burn, 15% severe injury (burn surface area more than 25% TBSA), 9 of them sustained inhalation injury (2% inhalation injury) and 2 patients with inhalation injury have been expired (0.5% expired) (figure 2).



(Figure 2) Distribution of admission in different burn departments

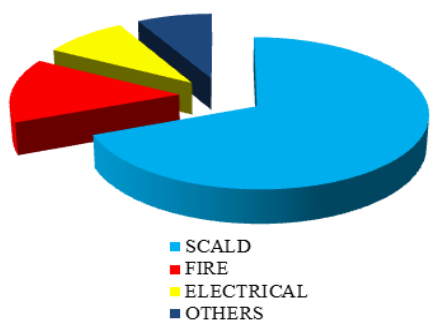
Male patients represent 61% of the admitted patients and Female patients represent 39% (figure 3).



(Figure 3) Male to female ratio of admitted patients

We observed highest percentage 65% (286 case) of admission during winter season.

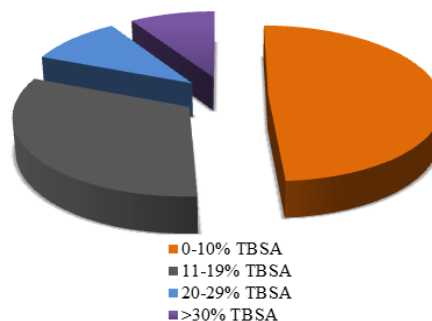
The cause of burn was as follow: Scald burn represent 69% of admitted cases, Fire burn represent 14%, Electrical burn represent 9% and Other causes represent 8% of them (i.e chemical burn, thermo mechanical burn, contact burn) (figure 4).



(Figure 4) Burn causes among admitted patients

The distribution of patients according to the burn surface was as following:

In 49% of the patients the burn was less than 10% of body surface. 32% of them the burn were involving 10-19% of body surface. 10% of cases the burn were involving 20-29% of body surface. 9% of cases the burn were involving >30% of body surface (figure 5).



(Figure 5) Severity of burn injury in admitted patients

Total number of patients treated surgically with auto skin graft or debridement was 221 patients out of 440 patients that represent 50% (table 1).

(Table 1) Surgical management

operations	NO. of patients	%
debridement	39 patients	18%
skin graft	182 patients	82%

Duration of stay in hospital: we observed that among the patients who admitted to pediatric Burn department, surgically managed patients group, stay in the hospital less than non-surgically managed patients (table 2).

(Table 2) Duration of stay in hospital

Patients groups	Mean of duration of stay in hospital
Surgically managed Patients (188)	8 days
conservatively managed Patients (186)	13 days

DISCUSSION AND CONCLUSION

-Under 5 years burned patients, represent about 20% of total burn admission to the burn & plastic surgery centre, Tripoli.

- Male patients had been injured in more than 60% of cases (male to female ratio 1.5:1). decreasing the possibility of child abuse in our society, similar results were obtained in Benghazi in 1981 and in U.K in 1999^(7,8).

-Burn injury occurs more frequently during cold weather because of usage of hot water and heater.

-Scald burn injuries are most common. Due to house hold accidents, these may include spilling hot tea, soup or hot water which can be avoided, similar results were obtained in India 2000⁽⁹⁾.

-Burn surface area was below 20% in more than 80% of patients.

-In 50% of patients the burn was 2nd degree (superficial) that managed conservatively.

-Early surgical excision & grafting lowering the duration of stay in hospital, similar results were obtained in researching papers from Nigeria 2010, India 2001, U.K 1999 and Saudi Arabia 2006^(10,11,12,13).

-Mortality rate was 0.5% among those children, due to major burn injury & inhalation injury.

-Child abuse is an important issue concerning burns, but could not be included in such research due to lack of the activation of social workers in our community, child abuse was reported in a study conducted in India in 2001⁽¹¹⁾.

RECOMMENDED PREVENTION PROGRAM

- 1- Educational cessations for all the community in the media about burn injury.
- 2-We recommend early surgical intervention in doubtful deep burn
- 3- Enclosing cooking area to prevent scald burn which is more prevalent.
- 4- Electrification to reduce dependency on kerosene.
- 5- Safe stove design.
- 6- Installation of detectors.
- 7- Reduce temperature level of the water heater.

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