

Original article

A two years Study of Fatal Burn Injuries in Dhaka Medical College

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Abstract

Objectives : Burn is a global public health problem, occurs since antiquity till the present day. Burn represent an extremely stressful experience for both the burn victims as well as their families. Flame burn and related injuries are major cause of death and disability.

Material and Methods : This study was carried out at the Forensic Medicine department in Dhaka Medical College from the year 2012-2013. This study was based on the post-mortem examination of the dead bodies at the mortuary of Dhaka Medical College. The purpose of this study is to record and evaluate the causes and magnitude of the fatal burn injuries retrospectively.

Results : Among 4898 cases of total autopsy done in 2012-2013, only 295 (6.02%) cases of death due to burn were derived. In this observation, death due to burn was mainly flame burn (97.29%) and superficial and 82% mortality over 40% TBSA (Total Body Surface Area). In age variation 21 to 40 year group were more (66.44%) affected in comparative than other age group. In sex, female (52.88%) were more affected than male (47.12%). In type of burn, flame burns were more (97.29%) than other type. Muslims were more affected (87.46%) than other religion. 82% death occurred over 40%-100% TBSA.

Conclusion : Burn is a common type of traumatic injury causing considerable morbidity and mortality. Detail study regarding flame burn is required to be carried out in this country.

Key words : Flame burn, Acid burn, Neurogenic shock.

Introduction

According to WHO, 2,65000 death occurred due to burn in each year across the world¹. More than 90% death occur in lower and middle income countries. Even in developed countries more than two million individuals annually are burned seriously and require medical treatment². A burn is an injury, which is caused by application of heat or chemical substance to the external or internal surfaces of the body, which causes destruction of tissues. The minimum temperature for producing a burn is about 44°C for exposure of about 5 to 6 hours. At 65°C, two seconds are sufficient to produce burns and full thickness destruction of skin occurs within seconds above 70°C³. In case of superficial burns, there is immediate erythema.

If there is formation of blister, then that occurs within 2-3 hours. The erythema around a blister or deep injury passes off by 2nd day. Pus formation occurs by 3rd day. Within the next one or two days there is slough formation, which is shedded off once by the end of the first week. Burn injuries involving the skin and deeper tissues take a minimum of 2 weeks to heal⁴.

The majority of deaths occurred within a week (80%) and most of the victims died from neurogenic shock followed by septicemia and Pneumonia. The purpose of this study was to record and evaluate the causes and magnitude of the fatal burn injuries retrospectively.

Materials and Methods

This descriptive cross sectional study of death due to burn was carried out in the Dhaka Medical College from January 2012 to December 2013. The data was collected from inquest report, challan and book of post mortem examination report, kept at the department of Forensic Medicine. This study was based on the post-mortem examination of the dead bodies at the mortuary of Dhaka Medical College. Dead bodies were sent from different Police Station and Dhaka Medical College Hospital. The records reveal various information pertaining to their age,

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sex, type of burn, Total Burn Surface Area (TBSA) and cause of death.

Results

The minimum temperature for producing burn is about 44°C for an exposure of about 5 to 6 hours. At 65°C, two seconds are sufficient to produce burns and full thickness destruction of skin occurs within seconds above 70°C. An analysis of autopsy records revealed that 295 (6.02%) cases of burn death among the total autopsy 4898, done over 2 years period (2012-2013) in the mortuary of Dhaka Medical College (Table-I). Among them 21-40 years age groups (66.45%) were affected more and more than 50% were female (Table-II & III). death mainly occurred by flame burn (97.29%) (Table-IV). Most of the death (35%) occurred due to involvement of 81-100% TBSA (Table-V).

Table-1: Manner of death from 2012 to 2013

Manner of death	Number of death	Percentage of death (%)
Hanging	725	14.80
Homicide	934	19.07
Poisoning	831	16.97
RTA	1149	23.46
GRP	306	6.25
FFH	144	2.94
Burn	295	6.02
Electrocution	88	1.80
Drowning	37	0.75
Natural(in Jail ,under Police)	188	3.84
Stillborn	47	0.96
Others	154	3.14
Total	4898	100

Figure-1 : Shows comparison between frequencies of burn death with other significant number of unnatural deaths.

Manner of death

Table-II : Age distribution of the death victim due to burn from 2012 to 2013.

Age in year	Number of death	Percentage
01-20	66	22.37%
21-40	196	66.45%
41-60	26	8.81%
61 and above	7	2.37%
Total	295	100%

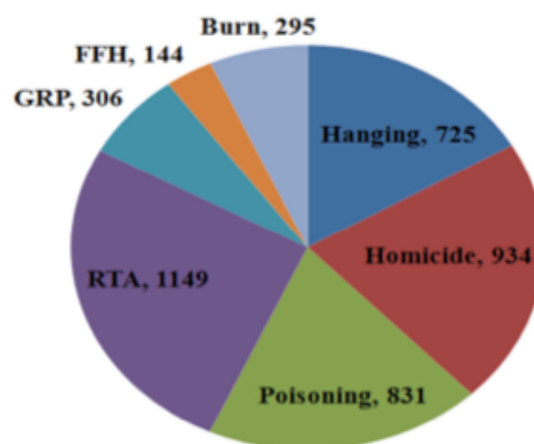


Table-III : Sex distribution of the death victim due to burn from 2012 to 2013

Sex	Number of death	Percentage
Male	139	47.12%
Female	156	52.88%
Total	295	100%

Table-IV : Type of burn causes death from 2012 to 2013

Type of burn	Number of death	Percentage
Flame burn	287	97.29%
Scald	7	2.37%
Acid Burn	1	0.34%
Total	295	100%

Table-V : TBSA (Total Burn Surface Area) of death victim due to burn from 2012 to 2013

Percentage of burn (TBSA)	Number of death	Percentage
Below 40%	56	19%
41-60%	76	25.76%
61-80%	60	20.24%
81-100%	103	35%
Total	295	100%

Discussion

A severe burn injury is the most devastating injury that a person can sustain and yet hope to survive⁵. Like Bangladesh from my study fire related burn or flame burn rate is also high as in lower middle income countries (LMICs)⁹. In our country it is mostly occurred at home, working place like garments or other factory and recently due to some political violence.⁶

In terms of the sex differences, women are usually at higher risk of burn than men. In India 65% burn death victim are women which is nearly same rate to my study¹⁰. Women are most vulnerable because of cooking, use of loose fitting dress, suicide and assault¹¹. In this observation 21-40 years age group are more affected than others. In compare with USA, Children under age 5 and older person above 65 years are more affected.⁷ It is mostly occurred due to smoking and home fire equipment¹². But from my study, this middle age group are more exposed in cooking, accident in factories and in some political violence.⁸ This study revealed that signs of vitality (Soot in airways and/or digestive tract) were found at autopsy in large majority of victims who died from burn. Sometimes person died during burn but there is no involvement of burn. As there is immediate combustion of oxygen and releasing of carbon particles. These particles are asphyxiant and the person died due to asphyxia¹³.

Conclusion

Burns have always been considered as one of the most destructive injuries, causing not only death but also major economic and psychological impacts and long term somatic sequelae as well. Moreover, burns are also among the most expensive traumatic injury, because of long hospitalization and rehabilitation and costly wound and scar treatment. Non fatal burn injuries are a leading cause of morbidity¹⁴.

Now a days burn is a major concern for health practitioners in our country, because of some burn cases occurred due to political violence which lead to death. The result of this study provides the necessary information to develop proper burn prevention programs, thereby reducing the frequency of burns and burn related death. For prevention of burn incidence we should take steps for:

- 1) Improvement of public awareness by the concern authority.
- 2) Training of communities in first aid.
- 3) Modernized health equipments.
- 4) Proper implementation of law.

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