

Epidemiology of Burn Injuries - Mortality and Morbidity in Hazara Division NWFP

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ABSTRACT

Background: History of burn injuries is as old as human history, when Stone Age man learns about lighting of fire. Perhaps before that when forests were put on fire due to natural hazards like lightning and human being and animals use to die as a result of fire.

Methodology: The present study is retrospective study of burn injuries. Conducted at Department of Forensic Medicine & Toxicology, Ayub Medical College, Abbottabad. The data was collected from Burns unit of Ayub Teaching Hospital Complex, Abbottabad. Total of 1822 patients were treated in this unit from 1999 (establishment of unit) till 2008. Study period extends over whole two years i.e. (2005 & 2006). The data includes all reported cases of burn those were admitted in the unit during the study periods from whole of Hazara Division.

Results: A total No. of 468 patients were admitted during two years of different age groups with burn due to different medium. Out of these 188 were having scald burn due to hot liquid (water/mild/oil/trephines) percentage of scald burn was 40.17% 34 were due to electric burn percentage of electric burn was 7.26% 38 were due to burn as a result of gas cylinder explosion. There percentage was 8.1. kerosene Oil burn was 5%. While hot steam burns were 2.48% due to flame/dry heat, total No. of burns patients were 174 and there percentage was 37.11%. Body portion wise burn injuries were 1152. Upper limbs sustained maximum injures 219 (19.01%) followed by thigh 159 (13.8%) lower limbs 139 (12.06%) head, neck and face 139 (12.06%) lumber 39 (3.38%) abdomen 135 (11.71%) chest 117 (10.15%) buttock 106 (9.20%).

Conclusion: Children and teen agars must be given education in school on possible dangers of using, match boxes, lighters and stove in the kitchen. Elders at home must be very careful while cooking and during other jobs in kitchens and children and infants should not be allowed in kitchen. House wives must be educated about extinguishing fire if accidentally there cloth caught fire and moreover house hold remedies for emergency purpose must be kept at a definite place for ready use.

Key words: Scald burn, epidemiology, kerosene oil

INTRODUCTION

Modern civilization provided and human being thousands of facilities, those harbour hundreds types of lethality in them which were not there centuries ago. Accidental fires in sky high building and industries and huge markets results in deaths of hundreds of people all over the world daily and disfiguring and disabling thousand every year.

Even in the developed countries like United States with abundant recourses, injuries and death due to burn remains the major cause¹. Majority of the deaths & injuries occur in the children teen agars & below 16².

Living tissues are vulnerable to temperature more than 50°C. Damage the tissues depends upon the intensity of the temperature and the time for which body remains exposed to source of burn.

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Damage can occur even at 44°C if contact remains over several hours. When injury is due to dry heat it is called a burn, there as injury caused by moist heat from hot water, steam and other heat liquids is called Scalding³.

When fire flam, or boiling hot liquid, hot gases, and heated solid substances are applied to body surface they produce burns. Certain chemical and electrically charged conductor also cause burn injuries⁴.

Majority of the death in burn cases are usually accidental. Suicidal death due to burning are at 2nd place, while rarely these are homicidal. Moreover victims of burn injuries and death are mostly infants, children and aged person. People under influence of Narcotic Drugs/Alcohol also becomes accidental victims, as they are unable to escape when a fire breaks out in houses, buildings. Some times people under influence of Alcohol and other Narcotic also start fire by careless act⁵.

Inhalation of smoke and Toxic fumes generated by burning of house hold materials is a major cause of death in cases of house fires rather than being burnt to death. On Autopsy if the soot is present in the lungs & air passages below the vocal cords, is the surest sign of death due to burn and an indication that person was alive when he caught fire. In contrast simple presence of soot in the mouth & Nasal passages is not a sure sign of live burn as it could have entered the nasal passage & mouth passively. Another sign of live burn is presence of Carboxy – Haemoglobin more than 10% in blood⁶.

The severity of burns of all degrees is directly proportional to degree of heat & time of exposure. This means that higher the degree of heat & duration of exposure more will be damage⁷.

In Pakistan also most cases of burns are accidental. As due to strong Eastern Culture even homicidal cases are narrated as accidental or suicidal. In the present study it is also evident that out of 468 admitted cases only one was homicidal.

MATERIAL & METHODS

The present study was conducted at the department of Forensic Medicine & Toxicology Ayub Medical College Abbottabad, data was collected from burn unit of Ayub Hospital Complex, Abbottabad. The data collected includes all reported cases of burn injuries admitted in the unit during in the unit during study periods. The cases were 468 patients were admitted in unit during study periods. The cases were categorized on bases of medium of burning and percentage and parts of body burned.

External examination of the whole body was conducted for the presence of burns injuries, the injuries were numbered, charted on the bases of site and extent. The injuries were examined with naked eye as well as with magnifying glass. Data were entered on the proforma and results summarized.

RESULTS

A total number of 468 victims of burn injuries were admitted in the burn unit during study periods. Out of 468 only one victim was burnt by homicidal means and one was admitted with history of suicidal injuries. Homicidal was a female both expired in the unit.

So, 466 cases were admitted with history of accidentally burns. Out of all admitted cases 27 injured died percentage was 5.64%. The most common medium of accidental burn was scalded burns due to boiling water, boiling milk and oil victims were 188 and there percentage was 40.17%. Second common cause was flam/dry burn victims were 174

and there percentage was 37.11%. Followed by, gas cylinder explosion 38 (8.86%). Electricity burns were 7.26%. Kerosene oil burns were 5% and steam burns were 2.48%.

The upper extremities sustained maximum number of injuries 218/90 or 219 (19.01%) followed by thighs 159 (13.8%), followed by limb 139 (12.06%) lower extremities 139 (12.06%). Head & neck 139 (12.06%) chest 117 (10.1%) and buttock 106 (9.2%). Hence total numbers of injuries body region wise were 1152 and average of 2.46 injuries per victim/injuries.

Table 1: Distribution of manner of injuries in injured (n=468)

Manner of injuries	n=	%age
Homicide	1	0.21
Suicide	1	0.21
Accidental burn	466	99.58
i. Electrocution	34	7.28
ii. Lighting	1	0.21
iii. Gas Cylinder Explosion	38	8.09
iv. Kerosene Oil Burn	23	4.85
v. Hot Liquid/Oil/Milk/Water	188	40.34
vi. Hot Steam	11	2.42
vii. Flame Burn	174	37.25

Table-2 Shows Distribution of Manner of Death in Burn injuries (n=27)

Manner of death	n=	%age
Homicide	1	3.70
Suicide	1	3.70
Lighting	1	3.70
Accidental	24	88.8

Table-3 Demographic data of burn injuries (n=468)

Variables (age years)	n=	%age
0-05	45	9.61
06-10	96	20.51
11-15	72	15.38
16-30	151	32.26
31-45	50	10.68
46-60	8	1.7
61-75	0	0
75-100	19	4.05

Table-3 Demographic data of dead as a result of burns (n=27)

Variable (age years)	n=	%age
0-05	11	40.74
06-10	04	14.81
11-15	03	11.11
16-30	04	14.81
31-45	02	7.40
46-60	01	3.70
61-75	01	3.70
75-100	01	3.70

Table-5 Distribution of burn injuries body region wise (n=1152)

Variables	n=	%age
Head, Neck, Face	138	11.97
Chest	117	10.15
Abdomen	135	11.71
Lumber	139	12.06
Buttocks	106	9.20
Thigh	159	13.80
Upper limbs	219	19.01
Lower Limbs	139	12.06

DISCUSSION

Injuries and death due to burns are daily occurrence like road traffic accident. Victims are mostly infants, children and old peoples. While in case of terrorist attack on building or market the victims may be of any age group. Similarly in countries at war any body may become the victims as a result of cannon fire, bomb blast or missile attack on houses, hotels, markets results in fire. Recently in Pakistan we have witnessed injuries and deaths at Marriot Hotel, Islamabad as a result of terrorism and at Rawalpindi Ghakhar Plaza as a result of electricity short circuit. In such events injuries and deaths are due to complex causes, like burn flames, toxic fumes inhalation due to burning of different materials like leather goods, nylon, clothes, plastic material, carbon monoxide poisoning fall of masonry etc.

As mentioned earlier death due to fire is not always due to burning of body directly but the cause may be poisoning due to inhalation of Toxic gases like, Carbon Mono Oxide and other Toxic fume Inhalation⁸.

As a result of fire in commercial market & residential area/buildings huge quantity of Toxic gasses like Nitrogen Di Oxide and Nitrogen Tetra Oxide are produced by burning of Nitro-cellulose film, artificial leather, wool or silk. Besides this ammonia and hydrogen cyanide, hydrogen sulphide and oxides of sulphur are produced during the burning of wool and other sulphur containing substances. Most of the people succumb to death due to inhalation of these gases before arrival of actual flame⁹.

In certain instances death may be due to injuries from falling masonry or other structure. The reflex shock due to fear may be another causes of death, but it is very difficult to prove during autopsy.

From our study it is evident that majority of the cases of burn injuries and deaths are accidental & 40% of the victims are infants & children up to age of 5 years. Next age group is 6-10 years. In contrast, a study from Karachi¹⁰ conducted at two burn unit during November 1992 – October 1993 shows that adult death rate is at higher level due to burn as compared to infants & Children.

Burn injuries as a result of child abuse in age group from 2 – 10 which are very common in European and American communities are very rare in Pakistan. More over these were non in over study as compare to study from USA¹¹.

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