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Original Research Article

An Autopsy Based Study of Burn Deaths at Jodhpur Region

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Abstract

Burn injuries are major public health problem globally. The global estimate of burn injury-related deaths in 2002 was 3,12,000 and contributed to 0.5% of all causes of deaths. An estimated 1,84,000 persons died of burn injuries in the countries of South East Asia Region (SEAR) in 2002 with 6.55 million disability adjusted life years (DALY) lost due to burns. In India 70 Lakh peoples encounter burn injuries and about 1.4 Lakh died every year. In Rajasthan there is no such exact data available. This study was conducted at SN medical college Jodhpur, Rajasthan and burn deaths constituting 19.34% of total medico-legal autopsies. The majority of burn deaths (77%) were observed in the age group of 21 to 40 years of age. Females were more in number with male to female ratio 1: 1.32. Most of deaths due to flame burn 81% followed by electric current accounting 18%. Accidental burn was most common and homicidal burn was least. Majority of burn victims were died in one week of incidence.

1. Introduction

Burn is common in the developing world and associated with the significant mortality and morbidity. Burn represents an extremely stressful experience for both the victims and their relatives. Burn is extremely common and a major public health problem in today's world. An extensive burn profoundly affects to the patient physically, financially and mentally. Burn is suicidal, accidental and homicidal in manner and may occur due to variety of electrical, thermal and mechanical products. Despite many medical advances, burns continue to remain a challenging problem due to the lack of infrastructure and trained professionals as well as the increased cost of treatment, all of which have an impact on the outcome. Previous epidemiological studies from different parts of India

have revealed that burn cases are prevalent all over the country.¹

In Jodhpur region the cases of burns form the major bulk of all medico-legal cases and incidence of these cases are still increasing due to more stress in day-to-day life for various reasons. To provide better facilities medically as well medico-legally it is very important and urgent to know about the profile of cases of burns especially in this region.

2. Material & Methods:

This study was conducted at department of forensic medicine & toxicology S.N. Medical College and associated hospital Jodhpur. Detailed history of the case was obtained from the patient relatives, police and the other available persons who will present at the time of incidence.

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Inclusion criteria: 100 case of burn deaths at mortuary of all associated hospitals of S.N.M.C. Jodhpur. **Exclusion criteria:** Death due to burn but incomplete information

2. Observations & Results:

Total 827 medico-legal were done during Aug.2011 to July 2012, out of which 160 deaths (19.34%) were of burn deaths. These results indicate that burn autopsies accounting major bulk of all medico legal autopsies in India. In this study 100 cases of burn deaths were observed. Maximum number of burn cases was seen in the age group of 21 to 30 years of age, 42 cases followed by 35 cases in age group of 31 to 40 years. 92% burn deaths were observed in age group of 21 years to 50 years of age. Least incidence of one case for each was observed in the age group of <10 and > 60 years (**Table no.1**).

Table no. 1: Age and sex wise distribution of burn cases

Age	Male	Female	Total
<10	01	00	01
11- 20	01	01	02
21- 30	18	23	42
31- 40	15	19	35
41- 50	05	11	15
51- 60	02	03	04
>60	01	00	01
Total	43	57	100

Table no.2: Sex wise distribution of burn deaths

Sex	No	%
Male	43	43%
Female	57	57%
Total	100	100%

Table no.3: Burn death as their marital status

Status	Male	Female
Married	30	46
Unmarried	13	11
Total	43	57

Table no.4: Manner of burn deaths with burn sources

Manner	Flame	Electric	Scald
Accidental	52	18	01
Suicidal	28	00	00
Homicidal	01	00	00
Total	81	18	01

These findings are in favour of that this is the most active group of population in India and burn may occur while working, safety measures are lacking. There were 43 males and 57 female deaths

as a result of burn observed in this study. The male to female ratio was 1: 1.32 (**Table no.2**).

Table no.5: Season wise distribution of burn death

Season	No of cases
Summer	34
Winter	39
Rainy	27
Total	100

Table no. 6: Cases according to burn body surface area

% BSA	Male	Female	Total
<40	18	01	19
40- 60	05	08	13
60- 80	09	12	21
80- 100	11	36	47
Total	43	57	100

This is quite explainable that most of housewife is working in kitchen and kitchen related activities where risk of burn accidents is more. Our study showed that 55 cases belong to rural area and 45 cases belong to urban region. Out of 100 deaths 76 cases were married and 24 cases were unmarried. Out of 76 married cases 30 cases were male and 46 were female. In unmarried person male female number were almost same, 13 male and 11 females (**Table no.3**). Present study showed that maximum number of burn deaths were accidental, 71 in no. followed by, 28 cases suicidal and 01 case was homicidal in manner (**Table no.4**).

In this study 81 cases of burn were observed as a result of flame, followed by electric burn, 18 cases and 01 case due to hot liquid. Out of 81 cases of flame burn, we observed that 52 cases were accidental, 28 cases were suicidal and 01 case was homicidal in manner of burn. The manner of burn in electric burn and scald was observed accidental in all 19 cases (**Table no.4**). kerosene oil was the major material which was involved in most of flame burn. The kerosene oil routinely is used for domestic purpose easily available for rural poor peoples. Maximum number of burn death was observed during Oct and Nov months, 28 cases followed by Aug and May, 10 cases for each (**Table no.5**).

This is quite explainable that in winter season use of flam is more in India scenario. 74 cases were observed with burn surface area more than 50%. Out of 74 cases 23 were male and 51 (about 70%) were female (**Table no.6**). In this study most of victims died within seven days of incidence and septicemia was most common cause of death.

3. Discussion:

During the study period of one year total 824 autopsies conducted in department of forensic medicine & toxicology S.N. medical college Jaipur. Out of 824 autopsies 160 (19.4%) cases of burn deaths were observed. Almost same findings were observed by the study done by Batra et al.² (23.3%), Ambade³ (21.6%) et al and Gupta et al⁴. Our study showed that the predominant age group was 21-30 (42%) irrespective of sex, followed by 31-40 (35%) age group. Similar findings were observed by Ganesamoni et.al⁵, and Jaiswal et.al⁶, were also the majority were in the age group 21-30 years. This study is not consistent with results of Albertin et.al.⁷ According to present study, females were more frequently affected (57%) than males (43%). Similar results were seen with Ganesamoni et.al⁵, Jaiswal et.al⁶. and less than study of Zanjad NP et al⁸ (72.1% were female) and Batra AK et al².

Accidental burns were more common as compared to suicidal and homicidal burns. These results were consistent with other studies which are done by Indian authors like Batra VN et al, Ambade et al, Gupta RK et al, Singh D et al and Subrahmanyam.^{2,3,4,9 & 10} Flame burns comprised of 81% of cases followed by electric burn 18% and scald burn 1%. Similar observation also noted by Zanjad et al, Subrahmanyam, Singh D et al and Gupta M et al.^{8,9, 10 & 11} The study showed that 74% of victims were having more than 50% of body surface area was affected by burn. Finding was consistent with study of Singh et al⁹, Bang RL et al¹² and song et al¹³.

In this study most of victims died within seven days of incidence (96%) and septicemia was most common cause of death. These findings are similar to Gupta RK et al⁴. and subrahmanyam M.¹⁰ The hospital acquired infections and extensive burn surface area of body are responsible for development of infection inspire of better care and treatment.

4. Conclusion:

This study concludes with:

1. Male to female ratio 1: 1.32
2. 92% burn deaths were observed in age group of 21 years to 50 years of age.
3. Maximum number of burn deaths was accidental, 71% and followed by suicidal in manner.

4. Most of burn was caused by flame, 81% and 18% caused by electricity.

5. Most of victims 96% died within 7 days and 28% died within 24 hours of incidence of burn.

6. About half of total victim burn had involved more than 80% of TBSA.

7. Females sustained more extensive burn than male victims.

5. Suggestions:

We observed that incidences of accidental burn were more so personal safety measures and equipment for safety should be used during working at fire places. Safety means in factories should be strictly observed by law enforcement agencies.

Ethical clearance- Yes.

Conflict of interest- None declared.

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