

Scald Burns, Children a Vulnerable Victim

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ABSTRACT

This retrospective study spans over a period of two years and included 18 scald cases all of them were accidental in nature. Majority of the reported cases were children who sustained scalds of more than 50% of the area of the body. Analysis of the data was done on the bases of age, gender, site where incidence took place, nature of injury, causative agent, duration patient survived and manner of death. There were 18 male cases and 6 female cases, all died due to incidence of scald. All reported cases were domestic in nature. Upper part of the body was affected in majority of the cases and boiling water was the main source of scalds. The surface area affected in all cases was more than 50% which was calculated with the help of rule of nine. The cause of death in majority of the cases was septicemia.

Aim: The aim of the study is to explore of causative factors of wet burns in young age group.

Methodology: This study is based on retrospective data which was conducted between the years January 2000 to December 2002. During this time period total of 16 cases of death due to hot liquid i.e. scalds were reported for autopsy nearly all of them belonged to young age group.

Results: The reported cases in our study were males (67.8%) and females (32.2%), the ratio of male to female was 2:1. The common age group effected was children ranging from 1-12 years (59.01%), followed by adults in the age group of 35 -45 (17.12%) years. Majority of the incidences were domestic in nature 72.2%. more than 70% of the incidences took place at home and more than 85% of the body area affected was thorax. Hot boiling water was the main cause of scalds.

Conclusion: Scalds appear to be one of the most common type of burns encountered in children, the major contributing factor is the ignorance on the part of the mother. All studies have proven one common thing that onus of responsibility rest on the shoulders of the parents, who should take the responsibility and be more vigilant so that such incidences should be avoided.

Key Words: Scalds, wet burns, adolescents.

INTRODUCTION

A significant portion of medicolegal cases are comprised of burns, which include all types of burns such as dry flame burns, wet burns and rarely chemical burns also. Scald is a type of wet burns, encountered due to application of hot liquid. Most common liquid reported for medicolegal examination are due to hot water and the victims are usually children and females working in kitchen.

Majority of the cases of scald burns usually survive as hot water after damaging the body dribbles away quickly and the surface of the skin also cools quite rapidly, leaving behind burns of variable thickness. It has been observed that if the total burnt area is less than 50%, the chances of survival are fairly good with good medical treatment. The situation becomes life threatening if the victims are children and elderly cases and the burn area is more than 50%.

The extent of damage depends upon the degree of temperature and duration of the application of hot liquid. The focus of this study is the pattern of the burns observed in different cases of scalds.

Injuries due to burns are very painful because majority of pain receptors are residing in the skin, and when skin is damaged quite extensively it produces severe and unbearable pain which itself is one of the cause of deaths in such cases.

Majority of the cases presented for autopsy include deaths due to firearm injuries at Allama Iqbal medical college, Lahore. However, deaths resulting from burns especially wet burns are also reported at intervals and luckily the proportion of deaths due to burns is not very high.

Literature review has shown that majority of cases of wet burns are accidental in nature and few cases of homicidal cases has also been observed whereas suicidal burn cases are extremely rare.

MATERIAL AND METHODS

A retrospective study was conducted between the years January 2000 to December 2002. During this time period total of 16 cases of death due to hot liquid i.e. scalds were reported for autopsy at mortuary of Allama Iqbal medical college, Lahore. Majority of the reported cases were of younger age group and were accidental in nature.

Before scrutinizing the autopsy reports prior permission from departmental head was taken.

RESULTS

The reported cases in our study were males n=12 (67.8%) as compared to females n=6 (32.2%), according to the reported cases the ratio of male to female was 2:1.

The common age group effected was children ranging from 1-12 years (59.01%), followed by adults in the age group of 35 -45 (17.12%) years, youngsters falling in the age of 20-30 (9.21%) years were effected to a lesser extent, and the least effected group was 15-20 years (2.22%).

Majority of the incidences were domestic in nature 72.2% (Table-1).

Table -1 Site of occurrence

Site of incidence	Total	%age
Within the premises of home	13	72.2
Outside home	5	27.8

The upper part of the body i.e. thorax was reported to be the major effected part followed by abdomen, 85.91% and 82.2% followed by upper limb 79.98% and lower limb 71.89%, head and neck 49%, perineum 23% (Table-2)

Table-2 Part of body damaged

Part of body involved	Total	%age
Face	17	49
Thorax	29	85.91
Abdomen	28	82.2
Upper limb	27	79.98
Lower limb	25	71.89
Perineum	7	23

The way burns were sustained were accidental in almost all cases. The most common cause of scalds was falling of boiling water on the body (68.7%), whereas scalds due to falling of hot mustard oil was (11.1%).

Splashing of hot water from pan occurred in (11.1%) of cases and splashing of hot water from pan occurred in (5.5%) of the cases.

Children who fell in hot water tub while playing were (5.5%), whereas splashing of hot milk occurred in (5.5%) of the cases (Table-3)

Table-3 Manner of injury

Infliction of injury	Total	%age
Fall in boiling water	11	68.7
Fall in hot mustard oil	2	11.1
Splashing of hot oil from pan	2	11.1
Splashing of hot water from pan	1	5.5
Fall in hot water tub while playing	1	5.5
Splashing of hot milk	1	5.5

Outcome of all patients were fatal, 16% of the patients died within first 24 hours, whereas 72.2% of the patients died within a week and 11% of the patients survived for more than a week but died after one week, all deaths took place at hospital and autopsy was done on all dead bodies (Table-4)

Table-4 Outcome of the patient

Survival period	Total	%age
Within 24 hours	3	16
Within a week	13	72.2
More than a week	2	11

Table-5 Cause of Death

Cause of death	Total	%age
Septic shock	12	66.6
Hypovolemic shock	6	33.3

The cause of death was septic shock in 66.6% of the cases whereas 33.3% of patients died due to hypovolemic shock (Table-5)

DISCUSSION

Death due to burns is a very painful event to finish life, whether it may be accidental, suicidal or homicidal. Majority of the reported cases of all burns including wet burns i.e. scalds are accidental in nature, a study conducted in 2010 by(1, 2). Among all the reported cases and in particular accidental cases the victim is dominated by young age group regardless to the gender, a study conducted in 2004 supports children to be common victim of burn by Sie SD, van Rossum AM, Oudesluys-Murphy AM supports the present study(3). Literature review also supports the view that scalds in the adolescents and old age group is not reported frequently, a study conducted in 2014 by Hollywood E, O'Neill T is favour of the present study(4), and if such cases are observed among this age group, majority of these victims usually showed good survival.

Scalds do not contribute to one of the leading cause of deaths, however, it is figured out to be a prominent cause of death in children who suffer more commonly from such causalities accidentally, a study conducted by Kemp AM, Jones S, Lawson Z, Maguire S in 2014 is in favour of our study(5). One of the prominent reasons of such incidences among children is the casual attitude of mothers who leave their children unattended, which is supported by the view that all such causalities are reported domestically and when mothers are engaged in some other work also in addition of doing kitchen work. In an 11-year review in a burn center in China in 2015 conducted by Zhu L, Zhang H, Shi F, Yi D, Zhu G supports our study(6).

The high mortality among children due to scalds is due to the fact that children at this age don't have much sense to protect themselves and do successful struggle to save their lives, a study conducted at Pediatric burns mortality risk factors in a developing country's tertiary burns intensive care unit in 2013 by Agbenorku P, Agbenorku M, Fiifi-Yankson PK supports this study(7). The other predisposing factors for such high mortality at this age is that they cannot forecast danger as readily which adults can, and they don't have proper control of the environment which is prevailing nearby and in the last they don't have such quick reflexes which could help them escape from the danger to save their life's, a study conducted in 2020 by Tiwari VK, Saxena S. regarding epidemiology of pediatric burns in tertiary care center of Vindhya region of Madhya Pradesh is in favour of the current study(8). The biological factors which make them more vulnerable is delicate skin at this age which could easily get damaged at low temperatures with grave consequences, a study conducted by Cassier S, Vazquez M-P in 2018 and a similar study conducted in 2020 by Zhu J, Shu B, Zhang L, Cai R, Liu N, Wu J, et al supports our study(9, 10).

The present study also reveals an important fact that the effected children sustained injuries on the upper part of the body much more than the rest of the body, this again shows that helplessness at this age group, negating the fact that majority of the mothers presume that if the child even gets damaged could survive and can protect himself, a study conducted in 2018 by Moehrlen T, Szucs T, Landolt

MA, Meuli M, Schiestl C, Moehrlen U supports our study(11).

Another important fact is that majority of the children who sustained scalds were playing near their mothers, who thought that all such children are safe when they are within view of their mothers, a study conducted by Collier ZJ, Roughton MC, Gottlieb LJ in 2017 is in support of the present study(12).

Our study highlights septicemia as the leading cause of death followed by hypovolemic shock, a study conducted in 2017 regarding Staphylococcal skin syndrome by Leung AK, Barankin B, Leong KF supports our study(13). It is a challenging job for the health professionals to control infection when major portion of the body is exposed to infection in addition to other challenges which child is facing, a study conducted by Steinvall I, Karlsson M, Elmasry M for c-reactive protein response in scald patients after antibiotic treatment is in favour of the present study(14). A protective cover provided naturally i.e. skin is no more present for protection which exposes the patient to multiple infections which is difficult to treat.

CONCLUSION

Scalds appear to be one of the most common type of burns encountered in children, the major contributing factor is the ignorance on the part of the mother who considers that if the child is playing near is safe, contrary to the fact that children are learning and so they are curious about all things and majority of the time they are exploring new things. All studies have proven one common things that onus of responsibility rest on the shoulders of the parents, who should feel their responsibility and be more vigilant so that such incidences should be avoided.

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