

Childhood Deaths Resulted from Burn Injuries in Diyarbakır

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Aim: Deaths resulted from burn injuries constitute a serious public health problem in developing countries. Deaths from burn injuries are usually seen secondary to accidents and more frequently occur in childhood. In this study; we intended to indicate the features of childhood deaths resulted from burn injuries and the causes of burns in Diyarbakır city.

Methods: The corpse examination and autopsy records of childhood deaths caused by burn injuries between 2003 and 2006 in the city center of Diyarbakır were scrutinized. It was determined that, during this period 49 deaths were caused by burn injuries.

Results: It was also determined that 61.22 % of the cases were male and 91.84 % of them were at pre-school age period (0-6 years). Origins of all incidents were accident and 75.51 % of accidents were resulted from scald burns. Forty of incidents were treated in a certain period and died during treatment.

Conclusion: During pre-school period, children spend most of their times at home, which might increase the frequency of burn injuries at this age. Since these kinds of accidents are generally preventable, implemented health and social policies will help to reduce home accidents.

Key words: Childhood, burn injury, death, Forensic Medicine.

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INTRODUCTION

Childhood deaths resulted from accident is frequently seen between the ages of 1 and 4. The most common cause of burns is scalding in the home at this age group. Deaths resulted from burning are usually occur accidentally yet rarely suicide and murder can be the origin. The frequency of death resulting from burning and its complications is very high in the childhood and elderly (1-3). Injuries due to burning may heal without complications or septicemia and death may be the direct result of burning (4).

With adequate fire safety in America, mortality of burning had decreased and between the date of 1993-1996, the ratio of death was reported to be 1,5/100000 (5). Deaths resulting from burning took the 15th place among the deaths in India (6).

Injuries resulting from burning in Turkey have a lower frequency than the other injuries but burn injuries were the worst of childhood injuries occurring in the home, in literature. In spite of all fire safety facilities burning remains as an important reason of mortality

and morbidity during the preschool period of childhood (7,8).

Our aim in this study was to show the importance and identify reason of death cases of burning in Diyarbakır city during the childhood.

MATERIAL AND METHODS

The corpse examination and autopsy records of public prosecutor office concerning childhood deaths caused by burn injuries between 2003 and 2006 in the city center of Diyarbakır were examined retrospectively according to parameters including age and sex, origin of deaths, and reason of burning under the age of 19. We evaluated data obtained from this study.

RESULTS

Forty-nine forensic death cases were detected to be secondary to burning during January 2003 to December 2006. We determined distribution of cases according to years as 28 of them were in the 2006, 6 of them were in the 2005, 8 of them were in the 2004 and 7 of them were in the 2003. Thirty cases were male in our study (Table 1).

Origin of all cases was recorded as accident. Scalding from hot water consisted 25 (51.02%) of the cases. Four of the 9 flame

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Table 1. The distribution of cases according to age and gender

Age group	Male	Female	n, %
0-6	26	19	45 (91.8)
7-12	1	-	1 (2.04)
13-18	3	-	3 (6.12)
n, %	30 (61.2)	19 (38.8)	49 (100)

injuries were resulted from blowing of gas filled tube. Two of the 3 cases older than 3 years were dead from blowing of gas filled tube and the other from electrical burn. Reason of other cases were hot slops (three cases), sunburn, electric, falling into Tandoori (Figure 1).

It was reported that 9 of the cases were dead without any medication, others were dead after obtaining medical treatment. Degree of burning was written as 1-2, 2-3 degree as so classification of burning couldn't be done in our study.

DISCUSSION

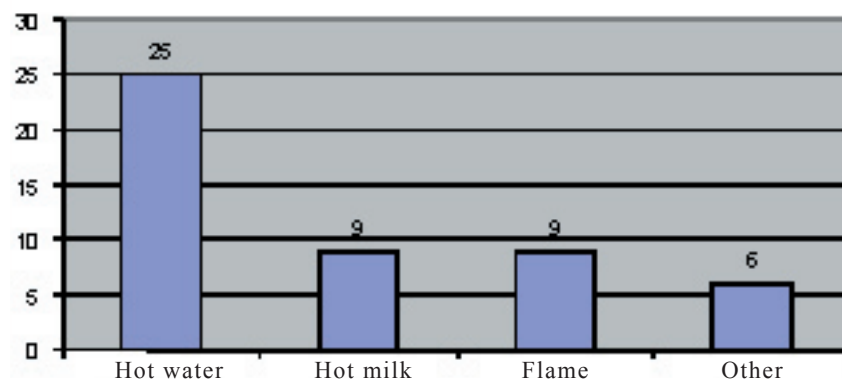
It was reported burns that are important reason of mortality and morbidity, were frequently seen at home and were mostly affect 0-4 years of age group (3). According to literature, burns are frequently seen in preschool period and boys are affected more than girls (9-13). Seventy point eight percent of the cases were between the ages of 0-4 in a study including 0-14 ages in Kuwait (14). Seventy seven percent of the cases of burning in childhood were between the age of 0-6 and 60.65% of them were male in a ten years

study previously conducted in Adana city (8). It was reported that 75.7% of the cases of burning in childhood were between the ages of 0-6 in a ten years study conducted in Adana (15). Approximately 92% of the cases in our study were between the age of 0 and 6. This ratio was higher than that in the literature. Ratio of males to females was similar to the literature.

The reasons of the high frequency of accidental burns in preschool period are insufficient development of child psychologically and physically, to avoid from danger and spending most of their time at home. Because of being more active and interested in their environment than girls, we think boys influenced from burning more than girls. Cases of burn took important place in accidental deaths under 5 years of age. Fifty point seven percent and 80% of the cases of burn were resulted from accidents in different studies in India (16). But these two studies in India were including all age groups. Ninety nine point four percent of 560 childhood cases of burn were resulted from accidental origin in a study in Kuwait (12).

We declared that all of the cases of burn had accidental origin in a previous study (8). Similarly, we saw all of the cases of burn were accidental in the present study. Our data in this study were taken from only corpse examination and autopsy reports.

In a study constituted 449 burning cases and under 16 years of age, scalding was the most frequent reason of burning under 4 years of age. Flame burning was seen in upper age group of child (11). Sixty nine percent of 560 burning cases of childhood were scalding, 59% of the burns were secondary to splashing of hot water and 4.6% of them were from hot milk in different study (12). Sixty five percent of burning cases between

**Figure 1. Distrubition of cases according to type of burning**

0-4 ages were scalding in a study in Holland (17), 67% of burning cases between 0-14 ages were scalding in a study in Kuwait (14). Most of burning cases between 0-10 ages were scalding in a study in Israel (18), 70% of burning cases in childhood were scalding, 16% of burning cases were flame burns in a study in Turkey (10). Approximately 74% of burning cases in childhood were scalding, 51.11% of them were burning from milk (8). Of all cases 37 (75.51%) of burning cases were from hot liquid in this study and this finding was similar to the literature.

Cases of burning were immediately referred to a center of burning or intensive care unit found in other cities, for this reason the number of the cases didn't reflect all burning cases in Diyarbakır. But we saw an increase (28 cases) in the 2006. In order to understand the reason of it we need more studies and we need to know if there were differences in medical units.

The reason of high frequency of accidental burns in preschool period might be secondary to insufficient development of child psychological and physical ability to avoid from danger and spending most of their time at home. Furthermore, children are more active and more curious about their environment, which face them to dangers. Because of this, burns related to home accidents that cause injuries and deaths are very important subject to think about it. These kinds of accidents are preventable and health and social policies must be developed and put into use.

REFERENCES

1. Abu Ragheb S, Qaryoute S, el-Muhtaseb H. Mortality of burn injuries in Jordan Burns. *Incl Therm Inj* 1984;10(6):439-43
2. Chadova L, Bouska I, Toupalik P. Lethal burn trauma in children. *Acta Chir Plast* 2000;42(2):60-3
3. Titus MO, Baxter AL, Starling SP. Accidental Scald Burns in Sinks. *Pediatrics* 2003;111: 191-4
4. Eke M, Soysal Z. Death related to burn injuries. Ed: Soysal Z, Cakalır C. *Forensic Medicine Vol II*. Istanbul University Cerrahpasa Medical Fakulaty Edition 1999;p: 653-73
5. Clark DE, Dainiak CN, Reeder S. Decreasing incidence of burn injury in a rural state. *Inj Prev* 2000;6(4):259-62
6. Batra AK. Burn mortality: recent trends and sociocultural determinants in rural India *Burns* 2003;29(3):270-5
7. Türegün M, Celiköz B, Nişancı M, Selmanpakoğlu N. An extraordinary cause of scalding injury in childhood *Burns* 1997;23(2):170-3
8. Akcan R, Arslan MM, Hilal A, Cekin N. Childhood deaths related to burn injuries in our region. VII Forensic Sciences Congress Brochure. 2006 Konya. P:73
9. Çekin N, Hilal A, Gülmen MK, Kar H, Arslan M, Özdemir MH. Medicolegal Childhood Deats in Adana, Turkey. *Tohoku J Med* 2005;206:73-80
10. Tarım A, Nursal TZ, Yıldırım S, Noyan T, Moray G, Haberal M. Epidemiology of Pediatric Burn Injuries in Southern Turkey. *Journal of Burn Care & Rehabilitation* 2005;26:327-30
11. Morrow SE, Smith DL, Cairns BA, Howell PD, Nakayama DK, Peterson HD. Etiology and outcome of pediatric burns *J Pediatr Surg* 1996;31(3):329-33
12. Bang RL, Ebrahim MK, Sharma PN. Scalds among children in Kuwait. *Eur J Epidemiol* 1997;13(1):33-9
13. Elisdottir R, Ludvigsson P, Einarsson O, Thorgrímsson S, Haraldsson A. Paediatric burns in Iceland. Hospital admissions 1982-1995, a populations based study. *Burns* 1999;25(2):149-51
14. Sharma PN, Bang RL, Al-Fadhli AN, Sharma P, Bang S, Ghoneim IE. Paediatric burns in Kuwait: incidence, causes and mortality. *Burns* 2006;32(1):104-11
15. Hilal A, Eren A, Turhan A, Cekin N. Childhood deaths related to burn injuries in Adana. VIII Forensic Sciences Congress Brochure, Kocaeli 15-18 May 2008; p:65
16. Singh D, Singh A, Sharma AK, Sodhi L. Burn mortality in Chandigarh zone: 25 years autopsy experience from a tertiary care hospital of India. *Burns* 1998;24(2):150-6
17. Hertog PC, Blankendaal F & Ten Hag SM. Burn injuries in the Netherlands. *Accident Analysis and prevention* 2000;32:355-64
18. Haik J, Liran A, Tessone A, Givon A, Orenstein A, Peleg K; Israeli Trauma Group Burns in Israel: demographic, etiologic and clinical trends, 1997-2003. *Isr Med Assoc J* 2007;9(9):659-62