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A Retrospective Study of Hospitalized Pediatric Burns Patients for Abuse and Neglect

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Abstract: ***A retrospective study of 50 children who were admitted in burns center in a tertiary care hospital was carried out as a preliminary study to identify the prevalence and the factors of abuse. Record review and a questionnaire was used in order to collect relevant information about the children, and also type of abuse from 50 children who were age less than 18 years and were hospitalized. Of the 50 records reviewed, 25 (50%) of them were below the age of 5 years. The main causes were hot water and milk scalds, flame and electricity. Results revealed that the presence of neglect leading to accident was highest among 30 (60 %) children and followed by accidental injury, 14 (28%). In 84% of the cases, injury occurred at home. Burn extent ranged between 1 and 94 % Total Body Surface Area Burns (TBSA).There were 10 deaths overall (20%) and the mortality rate was 50% among children aged 0-5years and 50% among children aged 10-18years. The mean burn extents, in these two age groups, were respectively 24.88% and 30.44%.The results indicate that burns in children below 5 years are serious traumas and have higher mortality rates. Four percent of children were referred to clinical psychology for counseling.***

Keywords: Child abuse, burns, physical abuse, neglect, emotional abuse

1. Introduction

Burns are an important cause of injury to young children; it's the third most frequent cause of injury that results in death next to motor vehicle accidents and drowning. The majority of burn injuries in children are scald injuries resulting from hot liquids, occurring most commonly in children aged 0-4 years. Other types of burns include electrical, chemical and intentional injury. Mechanisms of injury among children are often attributed to exploratory behavior without the requisite comprehension of the dangers that are present in their environment.[1]Though Burns have long been recognized as a cause of non-accidental injury burning by neglect is far more prevalent than other forms of abuse. Abusive scalds due to neglect outnumber those due to intentional injury by a factor of 9:1[2].

About 20% of children are hospitalized each year with thermal injuries. Documented child abuse accounts for 16%-20% of these pediatric burn admissions. These children are usually infants or toddlers, mean age 20 to 36 months. The mortality in abused children is significantly higher than that in children who sustain accidental burns.[3]While considering abuse of children, it constitutes all forms of physical and /or emotional ill-treatment, sexual abuse, neglect or negligent treatment or other exploitation, resulting in actual or potential harm to the child's health, survival, development or dignity in the context of a relationship of responsibility, trust or power [4].

The growing complexities of life and the dramatic changes brought about by socio-economic transitions in India have played a major role in increasing the vulnerability of children to various and newer forms of abuse including neglect[5].Physical abuse of children by burning is a serious crime that leaves the young children with permanent physical and emotional scars[6]. Abused children often suffer physical injuries including cuts, bruises and burns. In addition it causes stress that can disrupt early brain development. [7]A case series by Ruth G.D., et al on outcomes related to burn-related child abuse reveals approximately 10% of child abuse cases involve burning, and up to 20% of pediatric burn admissions involve abuse or neglect.[8] According to Peck MD, Priolo-Kapel D, cases of child abuse are an important manifestation of burns owing to their very nature and not uncommon occurrence. These injuries account for approximately 6-20% of all abuse cases,[9]severe burns are reported in an estimated 10% of all children suffering physical abuse [10].

A retrospective study of 440 hospitalized pediatric burns patients found 41 cases of neglect (9.3%) and 395 cases of accidental burning (89.8%). Study shows that burning by neglect is far more prevalent than abuse[2]. Neglect must itself be considered serious, as victims of neglect may become victims of further neglect and even abuse on returning home which may have fatal consequences.[11] Girl children are more likely to suffer from emotional abuse and neglect. Boys, on the other hand, are more likely to experience physical trauma [12].

Child abuse, neglect is not an isolated phenomena or a personality defect of the parents, rather normal parents are socialized into abusive child care practices through the interaction of cultural and familial influences.[11]Basically it results from interaction of many risk factors. A greater understanding of risk factors is required by the

professionals working with children and their families to identify maltreatment and high-risk situations.[5]

2. Materials and Methods

A retrospective review was conducted among 50 hospitalized children less than 18 years of age, and were admitted to the Burns Centre of a tertiary hospital with burns. Basic demographic data, clinical details, mechanism of injury, and outcome were collected on preformed proforma a checklist for hospitalized children. The check list included two sections:

Section- A includes background data such as the ward, code, diagnosis, hospital number, age, weight, height, type of injury, both Burn (area, pattern, depth, size, associated illness or injury) and other injury. History of injury, any past history, family history and any other children in the family affected with similar injuries. Location of injuries, place where injury occurred, frequency of injury, the time at which injury occurred and admission, people who brought the child to hospital were also noted.

Section-B includes subcategories like Physical Abuse with Physical Indicators: Unexplained bruises, welts, bite marks, lacerations (cuts) or abrasions (scrapes), burns, fractures and other injuries**.** Behavioral / Emotional abuse**:** Frightened /unusual fearfulness/ no interest to answer questions /history of running away /unwilling for examination, reports injury by others (specify), alcohol or drug abuse, failure to thrive, habit disorder like thumb sucking or biting /sleeplessness/ speech disorder /learning disorder/ outbursts of rage / delinquency (e.g. thefts) and attempted suicide. Sexual abuse: Complain of pain, swelling, or itching in the genital area, bruises, bleeding or lacerations in external genitalia, or anal, oral areas, report of sexual assault –rape /sexually transmitted infection (s) in a child or young adolescent /Recurrent UTI, report of fondling /exhibitionism /showing dirty pictures / kissing etc. Parent related indicators: inconsistent explanation on occurrence of and incompatible with injury. Reported mechanism of injury inappropriate to the child's motor development, unexplained delay in admitting /First aid not given immediately after the occurrence of injury, constantly blaming the child for injuries/ not responding appropriately to child's pain, child is taken to different physicians or hospital for each injury / child is frequently brought into medical care with symptoms suggestive of parentally induced or fabricated illness, trying to isolate the child from others, injury attributed to siblings, possibility of non-accidental injury as per history/ examination. Scoring was given arbitrarily as mild, moderate and severe form of abuse. Administrative permission and institutional ethical committee clearance was obtained prior to the conduction of the study. Data were analyzed using descriptive statistical method which includes frequency and percentage calculation.

3. Results

Records reviewed and analyzed show the following information. Twenty five children (50 %) were below 5 years and 25 (50%) of children were females. Of the 50 children, 47 (94%) had thermal burns, 3 (6%) came with electrical burns (table 1).Under thermal injury the cause was mainly scald injury, hot liquid / oil poured on the child in 20 cases, in that most of the cases i.e. 18 occurred among children below 5 years of age and injury due to flame was found in children above ten years of age (16 cases).Parental neglect leading to accident was the common form of abuse observed in 30 (60 %) and most of this (23) occurred among children below 5 years of age. Accidental injury was found in 14that is in 28% of the cases. Most of the accidental injury occurred (11) among children between 10 to 18 years of age. Maximum number (84%) of the injuries occurred at home. Burn extent ranged between 1 and 94 % T BSA. Burn extent in children between 10 to 18 years mean, 30.44%; range 2 to 94%, was higher than children below 5 years (mean,24.88%; range, 2 to 85 %) and children between age children 5 -10 years (mean, 15.5%; range, 1 to 32%)(Table 3).With regard to the outcome of injury 37 (74%) of children were improved after treatment, in that most of them that is 17 were below 5 years of age and 10 children died due to complications and severity of burn injuries. Four percent children were referred to clinical psychology for counseling (Table 2).

Table 1: Background Characteristics age, gender, type of burn injury& place of occurrence of injury among children (n=50)

Age	Frequency (%)	Gender		Type of burn injury		Cause of injury			Place of occurrence	
		Male	Female	Thermal	Electrical	Scald, hot liquid, oil	Flame	Electrical	Home	outside
<5	25 (50%)	13	12	25	-	18	7	-	23	2
5-10	7 (14%)	5	2	6	1	2	4	1	7	-
10-18	18(36%)	7	11	16	2	-	16	2	12	6
Total	50	25	25	47	3	20	27	3	42	8

Table 2: Form of abuse and outcome with age of children

Age	Frequency (%)	Form of abuse			Outcome			Counseling done
		Parental neglect leading to accident	Behavioral	Accidental injury	Improved	Discharged on request	Expired	
<5	25 (57.1%)	23	-	2	17	3	5	-
5-10	7 (8.57%)	5	1	1	7	-	-	-
10-18	18(34.28%)	2	5	11	13	-	5	2
Total	50	30	6	14	37	3	10	2

Table 3: Percentage of body surface area burned, age and outcome of children hospitalized in burns unit. (n=50)

Percentage of body surface area burned	Age in years		
	<5	5-10	10-18
	Frequency (%BSA burned)	Frequency (%BSA burned)	Frequency (%BSA burned)
<10	3 (7%, 2%, 3%)	2 (1%, 5%)	3 (2%, 7.5%, 9%)
10-20	10(15%, 19%, 19%, 10.5%, 13%, 13%, 14%, 15%, 18%, 12%)	2 (13%, 14%)	6(16%,19%,18%,15%,18.5%,13%,)
20-30	5 (25%,29%, 28%, 25%, 22.5%,)	2 (21.5%, 22%)	3 (23%,29%, 27%)
30-40	4 (39%,31%, 34%, 37%)	1 (32%)	1 (32%)
40-50	-	-	1 (42%)
50-60	2 (52%, 54%)	-	1 (54%)
60-70	-	-	2 (66%, 63%)
70-80	-	-	
80-90	1 (85%)	-	
90-100	-	-	1 (94%)
Mean percentage of BSA	25(Mean,24.88%;	7(Mean, 15.5% ;	18 (Mean, 30.44% ;
	Range, 2 to 85 %)	Range, 1 to 32%)	Range, 2 to 94%)

4. Discussion

The retrospective survey indicated that, most of the children 25(50%) were below 5 years of age and 18 (36%) of children were 10-18 years of age. Fifty percent of children were females. Of the 50 children, 47 (94%) had thermal burns, 3 (6%) had electrical burns. The findings are supported by a retrospective study done by Kumar P et al. on incidence, severity, extent, causes, risk factors and overall mortality, it shows that that 76.1% of the patients were <5 years of age whereas 23.9% of patients were between 6 to 10 years of age females were affected more than males (74.1 vs. 25.9%) [13].

The present study findings are in par with the study findings by Hansbrough JF, Hansbrough W. 1999, that shows that the incidence of burns in various age groups has a bimodal distribution with children 0-4 years accounting for approximately half the number of burn accidents and the number rising again as adolescents sustain activity and work-related injuries[14].

The most common cause of thermal injury in children was scalding. It accounted for 42% of the total number of children treated. In children under 4 years old scalds caused 75% of all burn injuries, most in the kitchen [1, 15, 16.] Scald (72.5%) followed by fame (22.7%) and electrical burn (3.2%) were most common cause of burn injuries found by another literature.[13.]

Scald injury, injury due to hot liquid / oil poured on the child was found in 20 cases, in that most of the cases ie 18 occurred among children below 5 years of age and injury due to flame was found in children above ten years of age (16 cases). As literature shows scald (72.5%) followed by flame (22.7%) and electrical burn (3.2%) were most common cause of burn injuries[13]. Burns and scalds are amongst the commonest causes of fatal child abuse and are one of the most painful injuries a child can sustain. They can cause long-term scarring, as well as physical and psychological disabilities[17, 18].

In this study most of the injuries, 84% occurred at home which was supported by finding from AgranPF, et al 2003[19]. Parental neglect leading to accident was the common form of abuse seen (68.57%) and accidental injury was found in 7 cases (20%) as reported [11].

The main cause of the burn trauma among children less than 5 years were the parents negligence, mainly that of the mothers, who is with children most of the time than fathers. In this study parental neglect leading to accident

was 30 (60%) and accidental injury was 14 (28%).Definitions for neglect have been used such as, 'an omission on the part of the parent(s) or designated caretaker to take minimal precautions for the proper supervision of the child's health or welfare'' [20], or ''failure of the caretaker to protect the child from injury, representing an act of omission'' as opposed to abuse which is defined as ''burn injury inflicted as an act of commission''[11]. Parents' education programmes should be considered as very important measure to prevent burn injury and its consequences. Importance of proper care must be strongly emphasized to them in order to prevent it further.

A study by Chester DL, on non-accidental burns revealed that of 440 hospitalised paediatric burns patients 41 cases of neglect (9.3%) and 395 cases of accidental burning (89.8%).[2] A study on frequency of suspected abuse/neglect in pediatric patients with burns presenting to an emergency department revealed that during a 12-month period, 431 patients were evaluated. Eighty-four (19.5%) were suspected of being abused or neglected. Fifty-eight (69%) of the suspected abused/neglected patients were diagnosed based on the history and/or physical examination[21]. Most of the children received burn injuries in the range of 0 to 20% BSA (63.1%). Overall paediatric burn mortality was 7.4%. [10]In this study Burn extent ranged between 1 and 94 % T BSA. Burn extent in children between 10 to 18 years mean, 30.44%; range 2 to 94%, was higher than children below 5 years (mean,24.88%; range, 2 to 85 %) and children between age children 5 -10 years (mean, 15.5%; range, 1 to 32%). Overall paediatric burn mortality was 20 %.

Child abuse is a complex problem that requires immediate intervention to protect the child from further harm[22]. A support-group structure is needed to reinforce parenting skills and closely monitor the child's well-being and evaluate the progress of the child and his/her caretaking situation. Healthcare personnel's support, monitoring, and counselling are useful ways to help families take adequate care of their children. At times, referrals to other professionals and agencies are necessary; helping a family obtain appropriate services is another valuable role that health care professional's play[23]. In the present study, 4% were referred to clinical psychology for counselling.

Burns in all age groups and of all etiologies are preventable traumas. When burn trauma occurs in children, it not only the child and family that is hurt but also society, owing to the increased need of resources to pay for hospital admission and to the high mortality rate.

5. Conclusion

Among children who were victim of neglect and abuse, majority (50%) were below 5 year age. Parental neglect leading to accident was commonest cause, 30 (60%) of burns in children followed by accidental injury, 14 (28%).Most of the injuries, 84% occurred at home. Four percent of children were referred to clinical psychology for counselling. Looking at the increasing incidence, it is necessary to develop a protocol/method to report about abuses and also to maintain one's safety tactics in life management as a child and also as an individual to live without physical, psychological and emotional trauma. Lack of empirical evidence and qualitative information on the dimensions of child abuse and neglect makes it difficult to address the issue in a comprehensive manner, so the investigators feel it is an important area to be explored further.

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