Childhood burns in south eastern Nigeria

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ABSTRACT

Background: Burns injuries are recognized as a major health problem worldwide. In children and, particularly, in our environment where poverty, ignorance and disease are still high, they constitute significant morbidity and mortality. Previous studies on this topic in parts of Nigeria either lumped adults and children together or were retrospective. We, therefore, prospectively studied the current trends in burns in children. **Patients and Methods:** This prospective study of burns spanned over a period of 18 months (June 2006–December 2007) at the Paediatric Surgery Units of the Imo State University Teaching Hospital, Orlu, and the Federal Medical Centre, Owerri, Imo State. Data were collected and analysed for age, sex, cause/type of burn, place of burn, presence or absence of adult/s, initial prehospital intervention, interval between injury and presentation, surface area and depth of burn and treatment and outcome. **Results:** Fifty-three patients were studied, 31 (58.4%) were male and 22 (41.6%) were female (M:F = 1.4:1). Patients mostly affected were aged 2 years and below. The most common cause of burns was hot water in 31 (58.5%) patients. The vast majority of these injuries happened in a domestic environment (92.5%) and in the presence of competent adult/s (88.7%). Outcome of treatment was good: there were two (3.8%) deaths and 46 (86%) patients had complete recovery. **Conclusion:** Burns is still a major health problem among children in south eastern Nigeria. Fortunately, outcome of appropriate treatment is good. However, we think that poor safety consciousness among parents is a major predisposing factor. Public enlightenment on measures to ensure safe home environment may be necessary to avoid or limit childhood burns.

Key words: Burns, children, injury

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INTRODUCTION

Burns are recognized as a major health problem worldwide. It is the major cause of morbidity and mortality in the general population. Burns have been ranked as the second most common cause of accidental death in children younger than 5 years and the most common cause of accidental death in the home.[1-3] This scenario gets compounded in a developing economy where level of poverty, ignorance and disease are high. There is need to assess the current pattern of this health problem in our region with a view to identifying more preventive and therapeutic measures and ultimately improve the situation. Previous reports on burns in parts of Nigeria were either retrospective or studied both adults and children together. We, therefore, looked at this health problem prospectively in children in south eastern Nigeria, with the hope that our findings will be a guide to offer preventive and therapeutic measures in these patients.

PATIENTS AND METHODS

This 18-month prospective study spanned between June 2006 and December 2007 at the Paediatric Surgery Units of the Federal Medical Centre, Owerri, and the Imo State University Teaching Hospital, Orlu, Nigeria. These are the two major tertiary health facilities in the Imo state, with a population of about 3 million people.

Relevant information on all burns patients within the age bracket of 0–18 years presenting to the centres were entered on a proforma. The data were analysed for age, sex, cause/type of burn, presence or absence of competent adult at the time of injury, any prehospital intervention, interval between time of injury and presentation at hospital, surface area of burn and treatment and outcome.

RESULTS

There were a total of 53 patients, 31 were males and 22 were females [M:F = 1.4:1]. Patients in the age range of 2 years and below were the most at risk, constituting about 47.2% of the patients [Table 1]. Hot water was

Table 1: Age Distribution of Patients

Age groups (yrs)	Number of patients	Percentages
1-2	25	47.2
2-5	101	8.9
5-10	13	24.5
10-15	4	7.5
15-18	1	1.9

the most common cause of burns, occurring in 31 (58.7%) of the patients. Four (7.5%) of the cases of hot water burn were intentional, with the parents/relatives either dipping the victims in hot water or pouring it on them for the purpose of treatment of convulsion [Figure 1]. The second most common cause was flame burns, occurring in 14 (26.4%) of the patients; seven of these cases were specifically due to kerosene or petrol explosion [Table 2]. Forty-nine (92.5%) patients sustained their injuries at home. In 47 (88.7%) patients, the injury occurred in the presence of at least one parent or some other responsible adult.

There was no initial prehospital intervention in seven (13.2%) patients. Nine (17.0%) patients received prehospital intervention, which we considered appropriate. These included cold water irrigation, dermazine cream, gentamycin, analgesics, tetanus toxoid and gentian violet dressing in various combinations.

Table 2: Aetiology of burns in patients

Causes of burns	Number of patients	Percentages
Hot water	31	58.5
Flame: Kerosene explosion	5	9.4
Petrol explosion	2	3.8
Others	7	13.2
Hot soup	3	5.6
Electric burn	2	3.8
Hot electric iron	2	3.8
Hot kerosene lamp	1	1.9
Total	53	100.0



Figure 1: Burns due to treatment of convulsion with hot water

Table 3: Surface area of burns in patients

Surface area (%)	Number of patients	Percentages
0-10	23	43.4
10-20	16	30.1
20-30	11	20.8
30-40	2	3.8
40-50	-	-
>50	1	1.9

Thirty-seven (69.8%) patients had initial intervention, which we considered either of unclear benefit or outrightly harmful. These included application of engine oil, palm oil, olive oil, aloe vera, dry salt, raw egg, honey, cutting open the blebs and beating the child.

Twenty-five (47.2%) patients presented in less than 6 h of the injury, five (9.5%) presented between 6 and 24 h of injury while the remaining 23 (43.4%) presented later than 24 h.

The burns surface area (BSA) ranged between 3 and 65%. Twenty-three (43.4%) patients had less than 10% BSA and one (1.9%) had 65% BSA [Table 3]. Partial-thickness burn occurred in 45 (84.9%) patients and full-thickness burn in eight (15.1%). There were no cases of inhalational injuries.

Twenty (37%) patients were treated with only dressing, analgesics, antibiotics and tetanus toxoid injection. This group of patients had burns of 5% or less of the BSA, a stable cardiovascular status and no evidence of dehydration. Twenty-nine (54.7%) others, in addition, required intravenous fluid replacement and urinary catheterization because there was more than 5% BSA burn, dehydration and/or significant sepsis. Four (7.6%) patients required surgery in the form of fasciotomy, escharotomy and/or skin grafting. The most common complications were wound infection at the time of presentation involving 20 (32.1%) patients and anaemia requiring blood transfusion in eight (15.1%) patients. There was complete recovery in 46 (86.8%) patients, five (9.4%) had significant morbidity in the form of contractures and unsightly scars and two (3.8%) died on admission. One death was due to severe pneumonia and the other due to septicaemia.

DISCUSSION

Burns injuries still constitute a serious health concern in children in south eastern Nigeria. The incidence of burns among the patients was inversely related to their age. Children below 2 years of age, particularly the males, were at the highest risk of injury from burns. These findings are similar to reports from other

centres.[4,5] This may not be unrelated to the fact that children between 1 and 2 years of age, particularly the males, are very active and explorative, yet with minimum ability to recognize hazards. Hence, they are more prone to accidents generally. The limbs and the trunk were the most commonly affected parts. There were no cases of perineal burns in this series and this may be due to the protected location of the perineum. This rarity of perineal burns has also been noted by Ameh[6] in another study. Scalds due to hot water seem to be on the increase (constituting 58.7% of the cases) compared with reports by Archibong *et al.*, where hot water, hot soup and hot oil put together constituted 56.6% of the cases. This prominence of hot water in the aetiology of burns has been noted in other parts of Nigeria by Adesunkanmi in the southwestern region[7] and Uba *et al.* in the northern region of Nigeria.[8] These findings are, however, at variance with some reports in which flame burns assumed prominence over hot water burns. However, we note that these contrasting reports studied adults and children lumped together.[9,10]

A worrisome aspect of our finding is the fact that the vast majority of these injuries occurred in the home environment and in the presence of competent adults. This suggests that there is a poor sense of safety among our people. The need for safety consciousness among Nigerians had been pointed out in an earlier study by Datubo-Brown.[11] Most of these burn injuries could have been prevented had the adults paid more attention to recognizing potential hazards.

Except for four cases in which the burn was caused in an attempt to stop convulsion with hot water, all the other injuries were accidental [Figure 1]. We did not encounter any cases of burns due to child abuse, as have been reported in some studies.[12]

Deleterious interventions in burns children are still very common in our environment. Cutting open blebs and application of raw eggs may enhance wound infection as in many of the cases. This incidence of infection is worsened by the late presentation in a majority of the patients. Additionally, the application of dry salt or engine oil may worsen inflammation.

A large percentage of our patients had relatively mild injuries and there were no cases of inhalational injuries. Thus, only dressing, analgesics and antibiotics were required in many of them. Others required additional intravenous fluid replacement and blood transfusion. Surgery was only necessary in four (7.6%) patients.

The mortality rate of only 3.8% in the present study is much lower than that reported from other centres. This encouraging outcome of our management is probably due to certain measures adopted in our institution: all paediatric burns patients requiring admission come in by a fast track. There are also experienced nurses dedicated to the care of these patients, both on outpatient and inpatient basis. Dressing was usually done using zinc oxide, gentamycin creams and sufratulle gauze, if it is a closed dressing. Wounds with sloughs were initially cleaned and dressed with EUSOL. Patients who had open dressing were nursed under the cradle and in a separate section of the children's ward to avoid cross infection and perching by flies. All patients were started on antibiotics as their wounds were considered to be infected or potentially infected. Adequate hydration of the patient was ensured in all cases, instituting intravenous fluid replacement when oral intake is either not possible or inadequate. Physiotherapy was promptly started once the wounds had healed significantly. This helped in preventing contractures and stiff joints.

In conclusion, burns injuries are still a major cause of morbidity and mortality in children in southeastern Nigeria. Hot water scalds occurring in the home environment in the presence of adults is common in our environment. Prehospital interventions in our environment are mostly deleterious. Appropriate and timely treatment of these patients can ensure excellent outcome in a majority of the cases.

We recommend that there is need for more public health enlightenment on the prevention and initial intervention in burns in children. Certain practices like dipping a child's parts of the body in hot or boiling water as a means of treating convulsion is based on ignorance and must be discouraged.

REFERENCES

1. Schubert W, Arhenholz DH, Solem LD. Burns from hot oil and grease: A public health hazard. J Burn Care Rehabil 1990;11:558-62.
2. Harmel RP, Vane DW, King DR. Burn care in children: Special considerations. Clin Plast Surg 1986;13:95-105.
3. Ryan CA, Shankowsky HA, Tredget EE. Profile of the paediatric burn patient in a Canadian burn centre. Burns 1992;18:267-72.
4. Archibong AE, Antia UE, Udosen J. Childhood burns in South Eastern Nigeria. East Afr Med J 1997;74:382-4.
5. Herndon DN, Rutan RL, Rutan TC. Management of the pediatric patient with burns. J Burn Care Rehabil 1993;14:3-8.
6. Ameh E. Perineal burns in children. Afr J Paediatr Surg 2004;1:33-5.
7. Adesunkanmi K, Oyelami OA. The pattern and outcome of burns injuries at the Wesley Guild Hospital, Ilesha Nigeria: A review of 156 cases. J Trop Med Hyg 1994;97:108-12.
8. Uba AF, Edino ST, Yakubu AA. Paediatric burns: Management problems in a teaching hospital in north western Nigeria. Trop Doct 2007;37:114-5.
9. Kalayi GD. Mortality from burns in Zaria: An experience in a

developing economy. East Afr Med J 2006;83:461-4.
10. Dongo AE, Irekpita EE, Oseghali LO, Ogbebor CE, Iyamu CE, Onuminya JE. A five-year review of burn injuries in Irru. BMC Health Serv Res 2007;7:171.
11. Datubo-Brown DD, Kejeh BM. Burns injuries in Port Harcourt, Nigeria. Burns 1989;15:152-4.
12. Thombs BD. Patient and injury characteristics, mortality risk, and length of stay related to child abuse by burning: Evidence from a national sample of 15,802 pediatric admissions. Ann Surg 2008;247:519-23.

Source of Support: Nil, **Conflict of Interest:** None.

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