Admissions for Burns in Children at Nchanga South Hospital- Chingola.

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Introduction

Man’s discovery of fire and the heat it produces has brought him immeasurable advancement in food preparation and industrial development in that heat is an invaluable source of energy. However along with these good effects, fire and its heat have also posed a great danger to man; that of thermal injury more also that this fire has a central place in our homes. As we use fire and heat in our day today activities accidents with fire will occur. In this study we look at the prevalence of thermal injury in children admitted to Nchanga South Hospital. This is a hospital managed by the Konkola Copper mines in Chingola a town located on the Copper Belt province of Zambia with a population of more than 200,000 people. The hospital however serves a catchment area of about 300,000 miners and their families. The facility is also open to non miners who can access it at a fee.

Patients and Methods

This was a retrospective study of all the patients who were admitted to Nchanga South Hospital children’s ward from January 2001 to December 2006, a period of six years. The numbers of children who were admitted for burns and the total number of children admitted to the ward were obtained from the ward registers. Using the file numbers of the children who were admitted for burns, a search was done for the record files of these children. The following information was obtained from the files and entered on a questionnaire which was formulated for the purpose: Age, sex, month and year of burn in addition to social status, cause of burn, part of body burned, surface area burned, acute and chronic complications encountered, whether skin graft was done or not out come and hospital stay. The percentage surface area burned was determined by the rule of sevens. Fluid management of all the children who were admitted was according to the hospital’s protocol on burns management which states in part: If the burn is more than 25% in adults and 15% in children a blood transfusion should be done. If the burn is 15% and above in adults and 10% in children crystalloid infusion will be needed. Below these percentages oral fluids should be encouraged. The burns were treated by the exposure method. Statistical analysis was done using Chi Square with Yates’s Correction for continuity.

Results

There were 2200 admissions to the children’s ward during the period of study, 117 were for burns, a prevalence rate of 5.3%. Only 50 records of the children admitted for burns were traced and analyzed.

Patients and Methods

There were 24 males and 26 females. The youngest patient was Seven months old and the oldest was 12 years. The mean age was 3.2 years (Table 1). In general, both sexes were equally affected although in the 1 to 2 years age group, more females were burned than males the reverse was the case for the 3 to 5 age group, these differences were statistically significant. The total number of cases admitted per year ranged from 324 to 390 with an average of 367 admissions per year. The number of burns cases per year ranged from14 to 25 with an average of 20 cases a year. Burns accounted for 5.3% of paediatric admissions. The majority of patients came from low or medium cost areas.
The most frequent cause of thermal injuries was hot water in 36 (72%), hot porridge in 5 (10%), fire in 4 (8%) and others in 5 (10%).

The hot water which burned most of the children was for bathing 22 (61%) followed by spillage of water for preparation of food 14 (tea or Nsima 39%).

The lower limbs, upper limbs and head and face were the most frequently affected in these patients. Apart from two children who had burns of deep burns of the feet sustained when they stepped in a burning rubbish pit, the rest of them sustained superficial burns.

The burn surface area was distributed as follows:
- 1-10% = 41 (82%) children
- 11-20% = 9 (18%) children.
- 20% = 0 children

The acute complications recorded included wound infections in 16 (32%) of patients and Anemia of varying degrees in 5 (10%) of the patients. Long term complications in form of contractures were seen two patients. There were no complications in 27 (54%) patients. Only 6 (12%) of patients had skin grafting.

All the patients were eventually discharged. The average hospital stay for the burned children was 11 days (Table 2). On average, the hospital stay in the children’s ward ranged from 3 to 5 days. There were no deaths recorded.

### Table 1. Age Distribution

<table>
<thead>
<tr>
<th>Age Range</th>
<th>0-2</th>
<th>3-5</th>
<th>6-8</th>
<th>9-11</th>
<th>12-15</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>05</td>
<td>13</td>
<td>03</td>
<td>02</td>
<td>01</td>
<td>24</td>
</tr>
<tr>
<td>Female</td>
<td>15</td>
<td>05</td>
<td>02</td>
<td>03</td>
<td>01</td>
<td>26</td>
</tr>
</tbody>
</table>

### Table 2. Hospital stay

<table>
<thead>
<tr>
<th>Hosp stay in Days</th>
<th>0-5</th>
<th>6-10</th>
<th>11-15</th>
<th>16-20</th>
<th>21-15</th>
<th>&gt;26 Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Of Pts</td>
<td>5</td>
<td>20</td>
<td>15</td>
<td>2</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>%</td>
<td>10</td>
<td>40</td>
<td>30</td>
<td>4</td>
<td>10</td>
<td>6</td>
</tr>
</tbody>
</table>

**Discussion**

Burns in children is a significant cause of admission to the Nchanga south hospital in Chingola and comprised 5.3% of the admissions during the six years. This is a District hospital serving a relatively small catchment area which explains the low numbers recorded. However in terms of prevalence, burns accounted for a significant proportion of admissions. This prevalence rate seems to have been more or less the same over the six years with little variation.

The majority (76%) of the children admitted for burns were five years old or younger. This is in line with what other workers else where have found. We did not find a statistically significant difference between the boys and the girls. Studies done in Peru and South Africa show the fact that the males are most vulnerable at about one year old and the girls become vulnerable at the age of four, we seem to have had the reverse.

The incidence of burns in Children is believed to be highest in winter. In our series, we found that the warm to hot months of August to December produced 50% of the burns while 26% occurred in the moderately warm period from January to March. In the cold months of April to July we had 18% of the burns. This could mean that other factors apart from cold weather are at play.
The social economic status of the victims is known to play a major in predisposing children to burn injuries, Delgado et al\(^1\) found that low income and crowding were associated with an increased risk, We found similar results in that 46% of our patients came from the low social economic sector of our population, 30% came from the middle income group and only 16% from the high income group.

The majority of the burns were scalds from hot water 72%. The hot water was in 61% of the cases for bathing and in 39% of the cases for the preparation of beverages (tea coffee coca etc) and the staple food Nsima. This could be explained by the fact that most families in Zambia may not be able to employ maids but instead stay with young relatives from the extended family to fill in the role of maids. The chore of bathing the children falls mainly on these relative/maids. The supervision of these workers is questionable. It is also noticeable that all the scalds occurred in the home except for the four who were burned with fire - They were burned while playing. These findings agree with most studies done on burns\(^2,4,5,6\). The home remains a dangerous place for children.

The literature documents that scald burns to the buttocks or the genital area are frequently reported to result from abusive trauma, this is not however a universal finding, Sintha et al\(^5\) found three out of the nineteen children with burns on the buttocks were suspected to have been due child abuse. In this study only 14% of the burns affected the buttocks and perineum and in all of them there was nothing to suggest possibility of child abuse, however it must be noted that this as a retrospective study, the right questions may not have been asked. The most frequently burned parts of the body were; lower limbs (44%) followed by upper limbs (34%). The other parts seemed to have been spared except the face which contributed 24% of the burns.

Most of the burns in this study were superficial and were less than 10% of body surface area however 18% of the burns were serious in that the were over 10% of body surface area. In terms of complications, the most common was wound infection (32%) followed by anemia in 10% of the patients. Two patients developed contractures and six of our patients needed skin grafting. The burn children stayed on average 11 days which was longer than the other children stayed. This was statistically significant (P= 0.001). This has cost implications; burns cost more to look after. The aim should be to prevent burns rather than manage them in hospital\(^2,4,5\).

References