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Cutaneous burns in children: Clinical and therapeutic aspects in the general surgery department of Hôpital Ignace Deen, CHU de Conakry (Guinea)

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Abstract

Aim: To contribute to the improvement of the quality of care of children with burns in the General Surgery Department of the Ignace Deen National Hospital, CHU Conakry.

Patients and Methods: This was a retrospective, descriptive study, lasting 3 years from January 2020 to December 2022, covering the consecutive records of children (0 to 15 years) with burns received in the general surgery department of the Ignace Deen National Hospital.

Results: During the three (3) years, we identified 55 burn patients. The mean age was 3.16 ± 2.85 years. Males accounted for 60% of the burns, with a sex ratio of 1.5. Burns were accidental in 100% of cases, occurred at home in 92.73% of cases, and were thermal in 94.55% of cases, dominated by hot liquids (85.45%). Burns were second degree (92%). The upper extremities (58.18%) were most affected. The mean surface area burned was $12.21 \pm 3.75\%$, and 60% were severe burns. Patients had received dressings (100%), analgesics (100%), antibiotics (100%) and vascular filling (72.73%). The mortality rate was 12.73% (N=7). The mean hospital stay was 9.7 days.

Conclusion: Skin burns in children are a common occurrence. It concerns male children under 5 years of age, burned by a hot liquid, largely related to their environment (home).

Keywords: Burn, skin, child, management, Ignace Deen

Introduction

Despite prevention and information efforts, burns remain a common accident in children (incidence 29-51%), with significant functional, aesthetic and psychological consequences [1, 2]. The highest incidence of hospitalized pediatric burn patients is found in Africa and the lowest in the Americas. Europe, the Middle East and Asia have similar numbers, but Asia's much larger population means that it accounts for more than half of the World's Pediatric burn population [3]. Carelessness at a young age combined with ignorance of the risk and even family carelessness exposes these patients to these risks [4, 5].

Mortality rates for these Pediatric burns, as well as risk factors, vary between regions and centers across the country [6, 7]. The aim of this study was to contribute to improving the quality of care for burned children in the General Surgery Department of the Ignace Deen National Hospital, CHU de Conakry, Guinea.

2. Patients and Methods

This was a retrospective, descriptive study, lasting 3 years from January 2020 to December 2022, which included consecutive records of children burned in the General Surgery Department of the Ignace Deen National Hospital, CHU Conakry. The variables studied were age, sex, causal agent, site of lesions, burned body surface area, depth of lesions, therapeutic course, evolution, length of hospital stay. Burned skin area was assessed using the Lund and Browder table. Poor record keeping and lack of a documentation center were our limitations and difficulties. For data entry, a database was created using Epi Data software version 3.1, and analyses were performed using SPSS version 21.

3. Results

Over a period of three (3) years, we enrolled 55 children with burn injuries. The mean age of the burn victims was 3.16 ± 2.85 years, with extremes of 4 months and 13 years. Males predominated (60%), with a sex ratio of 1.5. Burns were accidental in 100% of cases and occurred in the home in 92.73% of cases, including thermal (94.6%), electrical (3.63%), and chemical (1.82%) burns. The most common causative agent was hot liquid (85.45%), followed by flame (9.10%). We observed 2nd degree burns in 50 cases (96.36%) and 3rd degree burns in 2 patients (3.64%). They were localized to the upper extremities in 58.18% (n=32) (Table I). The mean burned area was $12.21 \pm 3.75\%$ (Table II), with extensive burns in multiple locations (Photo). The mean time to treatment was 4.5 ± 2.3 hours. Therapeutic management started with a peripheral venous line on admission in 48 patients (87.27%) and a central venous line in 7 patients (12.73%), followed by adequate filling according to the Carjaval rule in 40 burn victims (72.73%). Analgesics and antibiotics were given routinely. Antibiotic treatment was either ceftriaxone (50 mg/kg/24 hours) alone or combined with metronidazole (10 mg/kg every 8 hours). Tetanus serum was administered in 34.55% (n=19) of the burns. 94.55% of the patients received an occlusive dressing after local



Photo 1: 2nd degree scalding burn with 38% of body surface area burned in a 3 year old child.

4. Discussion

Despite prevention and education efforts, burns remain a common accident in children (incidence 29-51%) with significant functional, aesthetic and psychological consequences [1, 2]. In our study, the mean age of the patients was less than 5 years. This result is also described in the literature [8-12] and can be explained by the lack of vigilance and poor reflexes associated with psychomotor development. Therefore, it remains a target population for prevention [13].

In our study, the majority of patients were male. Ouédraogo S *et al.* [8] in Burkina Faso, Fomukong NH *et al.* in Cameroon [14] and Zahid A *et al.* in Morocco [15] also reported a male predominance in 56.1%, 63.5% and 55.65% of cases, respectively. This predominance could be explained by the behavior of boys, who have been described as more hyperactive [16]. In contrast, Ali Ada MO *et al.* in Senegal [10] and Mazou T *et al.* in Togo [17] reported a female predominance in 53.33% and 52.17% of cases, respectively.

All burns were accidental and in our study more than 4/5 were domestic. Lack of vigilance and poor reflexes expose children to

treatment (cleansing with 0.9% saline and application of Biafine ointment).

The outcome was favorable in 48 patients (87.27%). Mortality was 12.73% (n=7). Death was due to hypovolemic shock in 4 cases and septic shock in 3 cases. The mean hospital stay was 9.7 days.

Table 1: Distribution of burn victims according to burn location

Burn location	Number	Percentage
Upper limbs	32	58,18
Lower limbs	26	47,27
Abdomen	19	34,55
Thorax	15	27,27
head and neck	13	23,64
Perineum, external genitalia and buttocks	8	14,55

Table 2: Breakdown of burn cases by burned skin surface area

Burnt surfaces	Number (N=55)	Percentage
1-10%	22	40,00
11-20%	29	52,73
21-30%	3	5,45
31-40%	1	1,82



accidents, especially domestic ones. Thermal burns were the most commonly reported cause (93.3%-96.5%), and hot liquids were the main causative agent (58.5%-71.8%) [8-10, 15]. This high rate of thermal burns raises the thorny issue of parental responsibility for monitoring children and the need to adopt safety measures to minimize the occurrence of such accidents [18].

The upper limb (58.18%) and lower limb (47.27%) were the most common sites of injury. In the Literature, the predominant burn sites vary in proportion from one study to another the upper limb with 51% [19], the lower limb with 93.2% [10], the perineum with 51% [20], and the trunk with 32.1% [8]. The mean burned skin area of the patients in our series was lower than that reported by Soudre FM *et al.* [16] and Ouédraogo S *et al.* [8] in (26.6%) and (19.65%) of cases, respectively, but higher than that reported by Boumas N *et al.* (10.5%) [9] and Ali Ada MO *et al.* (10.72%) [10]. The predominance of second-degree burns in our study was reported by most authors [8-15].

Management consisted of conditioning (Venous line and vascular filling), analgesia, local care (dressings) and antibiotic

therapy. Antibiotic therapy was systematic in our series, partly because of the conditions of enrollment and partly because of the additional risk of nosocomial infection.

Overall, our burn patients had a favorable outcome, although we recorded a higher mortality rate than that reported by Ouédraogo S *et al* (10.53%)^[8] and lower than the 13.2% reported by Zahid A *et al*.^[15] The high mortality rate can be explained by the size of the burned body surface, the young age of the children (Mostly Infants), Bacteriol super infection of the burn lesion, malnutrition and the lack of specialized Pediatric burn units^[10, 21]. The average length of hospital stay depended on the extent of the lesions, their depth, and the treatment option.

Conclusion

Skin burns in children are a frequent occurrence. The causes are multiple and dominated by scalds and flames, largely related to the environment (home). Management of the disease is fraught with difficulties in our health structure. Preventive measures remain the most effective means of reducing the incidence of this trauma.

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Conflict of interest disclosure

The authors declare that there were no conflicts of interest in the preparation of this paper.

Declaration of informed consent

All authors appearing in this article equally share and agree to the publication of this article in your journal.

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