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Burns in Children and Adults Surgery Department Sikasso Hospital

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Abstract **Original Research Article**

***Objectives*:** The aim of this work was to determine the frequency of burns in adults and children, to describe the clinical and para-clinical aspects of burns and to analyze the results of treatment. ***Patient and Method*:** Retrospective and prospective study, January 1, 2014 to December 31, 2018, included all patients with severe burns admitted to the surgery department who had sometimes stayed in intensive care. ***Results*:** We collected 42 patients, the average age was 11.09 years with a standard deviation = 16.09 and extremes of 1 and 85 years, the sex ratio was 2.5 at the risk of men. 83.33% of patients came from an urban area. 90.48% were burned at home, thermal burn accounted for 92.86% and hot liquid was involved in 61.54%. 35.71% of patients were burned During the cold period (December). The upper limbs were affected in 76.19%. 20 patients (51.80%) had a burned body surface area greater than 10%. The superficial second degree was observed in 30 patients (71.43%). 26 patients (61.96%) had a standard burn unit less than 50%. 4 patients (9.52%) presented with ocular damage. Electrolyte disorders were observed in 6 patients (14.29%) on admission. The swab was taken from 14 patients (33.33%) and Escherichia coli was isolated from 3 patients (21.42%). All germs were sensitive to Imipenem; Amikacin; Fosfomycin. We adopted the PARK LAND formula for rehydration in 25 cases (59.53%). Within 24 hours all patients had received vascular filling, analgesic, dressing, anti-tetanus serum and 38 patients (90.48%) had undergone excision of the blisters. The Paracetamol+Tramadol combination was the analgesic observed in 24 patients. The combination of amoxicillin + clavulanic acid was used in 22 patients. The average length of hospitalization was 15 days with extremes of 3 to 35 days. The most common complication was local infection. The after-effects were brittleness (4 cases), keloids (3 cases). The death rate was 14.29% (6 patients).

Keywords: Burn; adult; child; treatment.

INTRODUCTION

A burn is an injury to the skin produced by the action of heat, electricity, radiation or chemicals; It can be superficial, deep, extensive or not [1].

The initial assessment of the burn is particularly important because it will allow appropriate treatment to begin and the injured person to be directed to the most appropriate structure for their condition. This initial assessment and the first treatments must take into account the pathophysiology of the burn [2].

Burn injuries, of accidental or intentional origin, are responsible for physical and psychological after-effects with a certain socio-professional impact for both the victim and those around them [3].

In France, it represented 45% of hospitalizations in specialized centers [4]. In Morocco, 113 cases of serious burns have been reported over six years, including 71 men or 63% and 42 women or 37% [5].

The vital prognosis depends on the extent of the burn, the depth, the location (age and history) of inhalation lesions and any associated lesions [6]. To date, many hospitals do not have a specialized burn department in Mali.

We undertook this study to describe the epidemiology, the therapeutic possibilities in our context, to determine morbidity and mortality and to review the literature.

METHODOLOGY

We conducted a retrospective and prospective study.
Retrospective phase: January 1, 2014 to December 31, 2017.

Prospective phase: January 1 to December 31, 2018, i.e. a total period of 5 years in the general surgery department of Sikasso hospital.

All patients with severe burns admitted to the surgery department who sometimes spent time in intensive care were affected. All consenting patients admitted to the surgery department were included.

General for serious burns

- Data were collected from consultation and hospitalization registers and patient files.
- Data entry and analysis were carried out using epi-info 7.0 software.
- The graphs and tables were created using Word Office 2013 and Microsoft Excel 2013 software.

The chi square test was used to compare the data; the difference is significant for a threshold less than 0.05 ($p < or = 0.05$).

RESULTS

We collected 42 cases of burns including 29 cases from January 2014 to December 2017 and 13 cases from January 2018 to December 2018. This represented 0.07% of hospitalizations, 0.06% of patients received in emergency, 0.34% of consultations. Males represented 71% and females 29% of patients.

The sex ratio was 2.5, the average age was 11.09 years with a standard deviation of 16.09, extremes of 1 and 85 years.

The majority of patients came from an urban area (83.33%) and 95.24% were recruited from emergency reception services; patients were brought in a non-medical vehicle in 59.52% of cases.

The majority of patients were burned at home, i.e. 83.33%. Thermal burn was the most common with 92.86%, hot liquid was the cause of thermal burns in 61.54%.

35.71% of patients were burned in December which is the cold period. Admission time was the first 24 hours in 57.14%

Undressing, rinsing with cold water, applying pasty products and extinguishing the flame were the first actions most used after the burn.

Hyperthermia was observed in 9.52% of patients in the first 24 hours and 16.66% experienced conjunctival pallor. The upper limbs were affected in 76.19% of cases.

The body surface area burned was greater than 10% in 80% of patients, the average body surface area burned was 21%.

The patients had superficial second degree burns in 71.43%, the standard burn unit was less than 50% in 61.96% of cases. 33 patients had an ABSI (Abbrevated Burn Severity Index) score between 4 and 5. Ocular damage was the associated lesion in 4 patients. 9 (21.43%) patients presented with hypovolemia shock

A blood sample was taken from all patients within the first 48 hours and 11.9% had a hemoglobin level below 10g/dl, 35.71% presented hyperleukocytosis. Serum creatinine was normal in 33 (78.57%) patients

The swab taken from 14 (33.33%) patients made it possible to isolate Escherichia coli in 3 (21.42%) patients, Staphylococcus aureus in 2 (14.28) Proteus mirabilis in 1 (7.14%), Pseudomonas aeroginosa 1 (7.14%) and in 7 patients (50%) no germ was found. Imipenem; Amikacin; Fosfomycin were the antibiotics to which all germs were susceptible.

Treatment in the first 48 hours was provided in the surgery department in 28 patients (66.67%), 6 patients (14%) stayed in intensive care.

Rehydration according to the PARK LAND formula was done in 59.53% of cases. Within 24 hours all patients had received vascular filling, analgesics, dressing, Anti Tetanic Serum (SAT) and 90.48% had undergone excision of the blisters.

The Paracetamol + Tramadol combination was used in 57.14% of cases, 53.38% of patients received Amoxicillin + clavulanic acid, 11 (26.19%) patients underwent necrosectomy. The fatty dressing based on white Vaseline was done in 40 (95.24%). 30 (71.43%) received an iso-rhesus group blood transfusion.

The average length of hospitalization was 15 days with extremes of 3 to 35 days. The evaluation of patients' pain using the Visual Analogue Scale found very intense pain greater than 6 on the first day in 30

(71.43) patients and less than 3 in 24 patients (57.14%) on the 10th day.

The complications observed were local infection 14 (33.33%), dehydration 10 (23.81%), malnutrition 10 (23.81%), sepsis 1 (2.38%).

The more extensive the body surface burned was; the higher the occurrence of infection.

Chi2= 6.021 P=0.012 df=3

The greater the depth of the burn, the greater the risk of infection.

Chi2=20.10 P=0.0001 df=2

8(19.05%) patients presented with after-effects including flanges 4/8(50%), keloids 3/8(37.5%) and fibrous retractions 1/8(12.5%).

The cure rate was 79.19% (32 patients), the mortality rate was 14.29% (6 patients).

COMMENTS AND DISCUSSION

Burns are responsible for one of the most devastating and frequent bodily injuries in the world, particularly in Africa south of the Sahara [2].

We had 13 cases of hospitalization per year in the general surgery department of the SIKASSO regional hospital; lower than the figure found by F.HAIDARA at CHU Gabriel Touré and E.TAURIA Maroc who observed respectively 22 cases (P=0.045) and 58 cases (P=0.001) of burns per year [2.7].

These 13 cases do not represent the true incidence in the region due to the absence of national statistics on this pathology.

The sex ratio at risk of the male sex has been proven in our study and by other authors [7, 6, 2]. This could be explained by the tendency of men towards risky behavior and exposed professions.

Age is a determining factor in the severity of a burn [2]. The average age of 11.07 years of our patients is lower than that of the authors [2] (25 years) and [8] (58 years).

The use of fire in general, and gas in particular which is much more frequent at home, burns at home were the most frequent in all series [2, 8, 9].

The length of hospitalization is multifactorial (percentage of body surface burned complications encountered).

This duration varied from 13 to 45 days according to different authors [2, 4, 7, 10]; the average duration of hospitalization of our patients was 15 days.

The greater the extent, the more serious the burn, in our series the average extent was 21%. The depth of the burn determines the potential for spontaneous healing, the superficial 2nd degree burn was the most frequent. 1st degree burns were treated on an outpatient basis and 3rd degree burns had a poor prognosis.

Thermal burn was the most frequent in our patients and in authors [2, 7, 11] (P≥0.05). The high frequency of thermal burns in the Sikasso region could be explained by the non-compliance with safety measures in the use of butane gas in homes and the multiplication of hydrocarbon sales points.

Certain locations complicate the prognosis and increase the vital and functional risk. Circular burns to the neck lead to asphyxia, burns to the perineum and external genitalia carry a potential infectious risk and a risk of obstruction of the urethral meatus. However, the limbs and the trunk were the predominant sites in our study and among the authors [2, 12].

The infection rate of 33.3% observed in our patients could be explained by the socio-economic conditions of our patients considered unfavorable. Dehydration 10(23.81%) and malnutrition 10(23.81) were the most frequent complications in our patients as in Australia [13].

The ABSI (Abbrevated Burn Severity Index) score is the most widely used specific prognostic index. It involves several parameters, in particular: the burned surface, third-degree lesions, inhalation lesions, as well as the age and sex of the patient [13]; 9.52% of patients had an ABSI score between 6 and 10, in these patients the prognosis was poor.

Surgical treatment involves either necrosectomy, discharge incisions, or grafting. The rate of surgical treatment varies according to the authors [5, 8]. 13 patients underwent surgery including: 11 cases of necrosectomy, 2 cases of skin grafting. All our patients benefited from a dressing with white petroleum jelly after cleaning with Chlorhexidine hexamidine + chlorocresol diluted 1/10 and rinsed with 0.09% isotonic saline.

The general criteria for infection, such as hyperthermia, leukocytosis, elevated CRP, are not pathognomonic when it comes to a serious burn patient; treatment must therefore take into account blood culture and antibiogram [14].

Antibiotic therapy was not systematic in our patients, it was based on the clinical signs of infection on the one hand and on the results of the cytobacteriological examination by swab on the other hand. 84.95% of patients benefited from antibiotic therapy.

CONCLUSION

Burning in Mali and specifically in Sikasso is generally encountered in domestic accidents. The second superficial degree happens to be more common. To be effective, rapid treatment adapted to the severity of the lesions is the only guarantee of survival. The functional after-effects are sometimes serious, limiting social reintegration, hence the interest in creating a burn center in Sikasso.

REFERENCES

1. Dréno, B. (2009). Anatomy and physiology of the skin and its appendages, annals of dermatology. Nantes University Hospital (France), 126, 247-251.
2. Fatoumata, H. (2014). Burns in adults in the general surgery department of the Gabriel Touré University Hospital of Bamako. University of Bamako, 14(256), 13-133.
3. MoAliAda, H., Moustapha., Habou, O., Ndour, O., Ngom, G., & Sankalé, A. A. (2016). Child burns by domestic accident in Dakar, *21*(2), 115.
4. Elkafassaoui, S. (2009). Predictive factors for burn mortality in hospitalized adults, University of Marrakech, 3, 189-194.
5. Evans. (2014). Annals of Burns and Fire Disasters, 1032 1040 p.
6. Tauria, E. (2013). Epidemiology of infection in burn victims hospitalized at the Mohamed 5 military unit in Rabat: University of Rabat; *1*(12), 11-24p
7. Zayakova, Y., Vajarov, I., Stanev, A., Nenkova, N., & Hristov, H. (2014). Epidemiological analysis of burn patients in East Bulgaria. *Burns*, *40*(4), 683-688.
8. Anna, F. T., Laura, P. B., & Michelle, M. K. (2013). Survival after burn in a sub saharan burn unit: challenges and opportunities, 39, 1619-1625.
9. Wainstain., Jean P., & Bourillon, A. (2012). Larousse medical. Paris: Larousse, 287.
10. Daan den H., Malin, A., & Anna, S. (2014). Epidemiology and referral patterns of burns to the burns center at inkosi albert luthuli central hospital durban. South Africa, 40, 1201-1208.
11. Ludovic Amengle, A., Bengono, R., Metego Mbengono, J., Beyiha, G., Ze Minkande, J., & Obama Abena, M. T. (2015). Epidemiological and prognostic aspects of severe burns in children. Yaoundé, 16, 2-6.
12. Bargues, L., Leclerc, T., Donat, N., & Jauit, P. (2009). Systemic consequences of extensive burns. France, 18, 687-693.
13. Wassermann, D. (2002). Severity criteria for burns: Epidemiology, prevention, organization of care. France, 30, 65-73.
14. Patrick. (2014). Burns: burns department, Bendadis University Hospital, constatine, continuing medical training, 17-23.