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Original Research Article

Epidemiological and Clinical Characteristics of Burn Sequelae at the Dermatology Hospital of Bamako

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Abstract: ***Introduction*:** The sequelae of burns induce variable functional, aesthetic and psychological repercussions. They can be minor or major. The sequelae of burns are basically attributable to two causes: the male therapy conducted and the severity of the burn itself. ***Objective*:** To describe the clinical and epidemiological characteristics of burn sequelae in the "young" Dermatology Hospital of Bamako in Mali. ***Methodology*:** A descriptive and transversal study carried up on patients with burns sequelae and operated in Dermatological hospital of Bamako at the plastic and oncological service from January 2017 to December 2020. The study population consisted of all the patients (138 cases) with burns sequelae. ***Result*:** The sex ratio was 1.06. The mean age was 13.73 years (range: 7 months to 74 years). The most affected age group was paediatric with 65.90% of cases and the dominant age group was 0 to 5 years old with 41.3%. Hot liquid was the most frequently found causative agent at 52.9%, followed by fire and hot metal at 31.2% and 8%, respectively. Flanges were the most dominant (56.80%), followed by cupboards (33.73%) and ulcers on old burns (4.73%). ***Conclusion*:** A well-conducted therapy would not only reduce the severity of burn sequelae but also avoid them, which would allow empowering patients after burns and reducing the high costs associated with the management of these sequelae.

Keywords: psychological repercussions, Dermatology, Mali, paediatric.

INTRODUCTION

Burns are often the most severe injuries a person can suffer and can be life-threatening, as major organ systems are affected in the event of severe burns. When the life of the burn victim is saved, the sequelae, which are often more serious, appear despite current advances in the management of these patients.

Sequelae is defined as "the disorder or injury that persists after healing from a trauma or disease, as a consequence of the same, and that produces a certain decrease in the functional capacity of an organism or a part of the same". In the case of patients who suffer from burns, this disorder can be objective, functional, morphological or simply aesthetic, but it can also be subjective and occur after the lesions have completely resolved [1].

The after-effects of burns have varying functional, aesthetic and psychological repercussions [2]. They can be minor characterized by pruritus, cutaneous hyperesthesia, skin fragility and pigmentary disorders among others or major giving hypertrophic scars, keloids, retractions, pathological amputations, neoplastic grafts on burn scars, tendon and/or osteoarticular sequelae [2]. The sequelae of burns are basically attributable to two causes: the poorly conducted therapy and the severity of the burn itself. Understandably, by prolonging the treatment of wounds without proceeding with the graft, we allow the exuberant formation of a true retractile fibrous callus which gives keloids and flanges causing serious deformities [3]. In a study by Bakayoko in 2007 and in paediatric surgery at the Gabriel Touré Hospital in Mali, carried out on burns, 47.1% of burn victims recovered with sequelae [4].

The aim of this work was to describe the clinical and epidemiological characteristics of burn sequelae in the "young" Dermatology Hospital of Bamako in Mali.

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This would allow us to have tangible data concerning the burn sequelae in this new hospital.

METHODOLOGY

This was a descriptive and transversal study carried up on patients with burns sequelae and operated in Dermatological hospital of Bamako at the plastic and oncological service from January 2017 to December 2020. The study population consisted of all the patients (138 cases) with burns sequelae operated in dermatological hospital of Bamako. Those patients not willing for surgery, physiotherapy and follow up or patients with incompletes folders and those patients loss of view during the treatment were excluded from the study. All patients were assessed clinically for site and type of burns sequelae.

The project's study had been validated by the competent authorities and informed consent of the patients was obtained. The data were obtained from patient's folders exploitation, the operative registration and from postoperative following register. A questionnaire containing socio-demographic and clinical data was used to collect data from all patients. The generated database was processed using version 8.0 of the Excel software and the information obtained was analysed by SPSS version 20 statistical program. The summary of the data was done through the frequency and the percentage and carried up on tables.

RESULTS

We listed 138 patients operated on for burn sequelae from 2017-2020. The sex ratio was 1.06. The mean age was 13.73 years (range: 7 months to 74 years). The most affected age group was paediatric with 65.90% of cases (Table 1) and the dominant age group was 0-5 years old with 41.3% of all case studies and 62.63% of paediatric cases alone.

Table 1: Frequencies by Age Group and Age Group

Age range		Frequency	Percentage	Cumulative Percentage
Child	0-5	57	41,3	65,9
	6-10	21	15,2	
	11-15	13	9,4	
Adult	16-20	12	8,7	34,1
	21-25	10	7,2	
	26-30	11	8,0	
	31-35	1	0,7	
	36-40	3	2,2	
	41-45	4	2,9	
	45-50	2	1,4	
	51 et plus	4	2,9	
Total		138	100,0	100,0

According to the origin of the patients, the district of Bamako brought 42% of the cases, which could be due to the fact that everyone ends up in Bamako, which means that often, even short-stay cases, often consider themselves from Bamako. The district was the regions of Kayes, Koulikoro and Ségou with 21% for the former and 8% for each of the latter two giving these four localities 79% of all cases (Table 2).

Table 2: Patients according to origin

Region of origin	Frequency	Percentage
Bamako	58	42
Kayes	29	21
Koulikoro	11	8
Ségou	11	8
Mopti	9	6,5
Sikasso	8	5,8
Outside the country (foreign patients)	8	5,8
Tombouctou	2	1,4
Gao	2	1,4
Total	138	100

Hot liquid was the most common causative agent at 52.9%, followed by fire and hot metal at 31.2% and 8% respectively (Table 3).

Table 3: Patients according to Causal Agent

Causal Agent	Frequency	Percentage
Hot liquid	73	52,9
Fire	43	31,2
Hot metal	11	8
Biological Agent	6	4,3
Electricity	3	2,2
Friction	2	1,4
Total	138	100

The hand was the most affected area (56.5%), the elbow at 21% and the wrist at 10% respectively (Table 4), noting that the most affected body area was the upper limb at 94.8%, suggesting the primary defence function of the upper limb.

Table 4: Patients according to Topography of lesions

Topography of lesions	Frequency	Percentage
Hand	78	56,5
Elbow	29	21
Wrist	14	10,1
Face	12	8,7
Armpits	10	7,2
Ankle	6	4,3
Neck	5	3,6
Toes	3	2,2
Perineum	1	0,7
Total	138	100

In the 138 patients in the study, 169 types of burns sequelae (Table 5) were identified and divided between them we had scar retraction flanges, scar patches, syndactylia, ulcers on old burns and pathological amputations. Flanges were the most dominant (56.80%), followed by cupboards (33.73%) and ulcers on old burns (4.73%). The latter rate, although apparently lower than the first two, deserves special attention because of its character of malignant transformation.

Table 5: Patients according to different types of burns sequelae

Type of Sequelae	Frequency	Percentage
Scar retraction flanges	96	56,80
Scar patches	57	33,73
syndactylia	5	2,96
Ulcers on old burns	8	4,73
Pathological amputations	3	1,78
Total	169	100,00

DISCUSSION AND COMMENT

It would be very difficult to reduce the severity of burns, but a well-conducted therapy would not only reduce the severity of the sequelae of burns but also avoid them; this would make it possible to empower patients after burns and reduce the high costs associated with the management of these sequelae.

In the literature, the aetiology of the burn that causes sequelae varies among authors. Sankalé *et al* in Senegal found that the most common cause of fire-flame or ember burn sequelae is reported, with a rate of 49.5% of cases [5]. In Mali Coulibaly O *et al* found that the causative agent was a hot liquid in 89% of cases, flame in 6.8% of cases and electrification in 4.2% of cases [6]. In another study in Mali by Coulibaly Y *et al*., hot water was the most common cause with 18 cases, followed by hot food (12 cases), flame (4 cases), hot oil (2 cases), hot objects (2 cases) and electric current (2 cases) [7].

In Morocco, Chafiki N *et al.*, found that the mechanism of the burn was most often thermal by flames in 61% of patients [2].

In our study, hot liquid was the most frequently found causative agent at 52.9%, followed by fire and hot metal at 31.2% and 8%, respectively. Our results are similar to those of Coulibaly O and Coulibaly Y.

In humans, there are sequelae by retraction leading to functional and psychological disorders. These retractions are treated with local plasty. On the upper limb, burns are most often on the hand, constituting

serious burns sequelae because of this organ importance [8].

At the level of the axillary hollow, these are essentially linear flanges or hemi cupboards concerning one or more pillars giving the appearance of thoracobrachial symphysis in children. They are most often treated with IC or trident plasties. In our study, 7.2 % of patients.

In the elbow, 21% of our patients had sequelae. At this level, most often, according to Higazi M [9], these are linear straps that can be prevented by wearing splints of extended postures. Treatment usually involves local plasties or immediate or delayed skin graft release had sequelae at this level [2]. Some of our patients (10.1%) had sequelae in the wrist. According to Echinard C *et al*., this area can be the site of retractions leading to deformities that hinder both dorsal and palmar flexion. In general, the transverse incision followed by a semi-thick skin graft or the transposition of a local flap, as well as the wearing of posture splints, allows for the restoration of satisfactory mobility [8].

Latarjet J *et al*., noted a predominance of sequelae in the hands. Burns on the hand are common and 50% of patients admitted to Saint Joseph Hospital in Lyon are carriers. Our results are similar to those of the latter where we found that the hand was the most affected area (56.5%) [10]. According to Guitard, the frequency of hand involvement is explained by the fact that the hands and face are the parts of the body that are not protected against the various aggressive agents [11]. According to the same author the child suffers from burns to the hand during the "conquest of his gripping space". Coulibaly O *et al* found that about 37% of patients had sequelae in the hands [6].

The dorsal side of the hand is more frequently affected in adults and less frequently in children [5].

These sequelae can retract and prevent flexion of the metacarpophalangeal. This is due to the defect of the skin in the longitudinal as well as transverse direction [12].

Regarding the sequelae of the lower limbs, they are rare and most often occur at the popliteal level. As for the ankle, we can observe an equine. The rarity of sequelae is consistent in our study where we have similarities with these authors in that we found only 6.5% of sequelae in the lower limb, including 4.3% in the ankle and 2.2% on the toes [10].

Cases of amputation as sequelae of burns, although rare, are mentioned in the literature. We had 1.78% of our cases all in the fingers. Chafiki N *et al* found seven cases of upper limb amputations; digital amputations following initial charring in 4% of cases, forearm amputations following charring followed by a secondary infectious process in 2% of cases, arm amputation following electrification by high voltage current. The same authors also found total or partial amputations, sometimes bilateral, of ears following chondritis of the pinna in 25% of cases [2].

CONCLUSION

The after-effects of burns are common in our country and for good reason; we should prevent burns at all costs. For the most part, they could be prevented. Campaigns to raise awareness among the population and train health workers are possible in the most affected areas, particularly in Kayes, Bamako and Ségou. A well-conducted therapy would not only reduce the severity of burn sequelae, but also avoid them, which would allow patients to become empowered after burns and reduce the high costs associated with the management of these sequelae.

Conflict of Interest: None

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