

Ulcer-Necrotic Wound: Socio-Economic Impact, Kayes, Mali

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Abstract

The issue of wound care has always played an important role in the practice of medicine. This is evidenced by Ambroise Paré's decision to publish his first work on this subject, "La manière de traiter les Plaies" (The Way of Treating Wounds) in 1545. **Objective:** To evaluate the therapeutic methods we practice and to describe the impact of the pathology on socio-economic and professional development. **Patients and Method:** This was a retrospective study carried out at the Fousseyni Daou Hospital in Kayes from January 1, 2018, to December 31, 2020. We included all patients with an ulcer-necrotic wound on immunocompetent terrain hospitalized in the department. Patients with ulcerative necrotic wounds of diabetes, HIV, or cancerous origin were not included. The parameters studied were: etiologies, local care, sequelae, and socio-economic and professional aspects. **Results:** We collected 57 patients of whom 43 were men and 14 were women, *i.e.* a sex ratio of 3. The mean age was 40.7 years with a standard deviation of 8.4 with extremes (7 years and 80 years). The average consultation time was 25.1 days. The most represented socio-professional stratum was agropastoralism in 37 cases (65%). The predominant etiological factor was neglected traumatic wounds in 34 cases (59.6%). The site was the lower limb in 39 cases (68.5%). The germ found was *Staphylococcus aureus* in 21 cases (36.8%). The particularity during local care was the use of table sugar in 9 cases (15.7%) and maggot therapy in 2 cases (3.5%). Hyperthermia was the clinical sign of aggravation in 22 cases (38.6%)

and we diagnosed 2 cases (3.5%) of tetanus. The mortality rate was 15.7% (9 cases) and 30 cases (52.7%) of sequelae after recovery. The average length of hospitalization was 38 days. Hospital care was provided by the social welfare service in 35 cases (61.4%). Nineteen (19) patients (39.5%) were unable to resume their socio-professional activity. **Conclusion:** Ulcero-necrotic wounds are complex to manage and can have a lifelong influence on the socio-professional and economic activity of patients.

Keywords

Ulcero-Necrotic Wound, Surgery, Disability, Socio-Economic

1. Introduction

Ulcero-necrotic wounds (UWN) are acute bacterial infections of the deep layers of the skin by aerobic and/or anaerobic bacteria of varied topography and microbiology [1] [2]. It progresses to chronicity when there is an absence of healing within 4 - 6 weeks has failed to follow the normal methodical process of healing [3]. Ulcero-necrotic wounds are a medical-surgical emergency whose evolution may lead to septicemia, which is sometimes fatal for the patient. The germs frequently found are beta-hemolytic Streptococcus and Staphylococcus aureus, but a poly-microbial association is sometimes noted [3]. There is a male predominance with preferential involvement of the lower limbs. PUN presents as a blackish necrotic lesion on an inflamed, edematous, and very painful limb associated with other local signs: oedema, induration, haemorrhagic bullae, cyanotic placard, greyish livid zone, cutaneous hypoesthesia, snowy crepitation, muscle deficit. The chronicity of ulcero-necrotic wounds is a public health problem. In France, according to the inter-regime health insurance information system, in 2012, 670,000 patients were treated for chronic wounds [4]. In the United States, 500,000 to 600,000 patients are treated for chronic limb ulcers per year [5]. In sub-Saharan Africa, several studies have suggested an infectious etiology of ulcero-necrotic wounds [6] [7]. Because of their chronicity, ulcero-necrotic wounds have a major repercussion on the quality of life of the patients and decrease their autonomy; they have an impact on the socio-economic development of the patient's family and the State through the hospital social assistance service.

1.1. Objectives

To evaluate our therapeutic methods, and to describe the impact of the pathology on the socio-economic development of patients.

1.2. Patients and Method

This was a retrospective study conducted at the Fousseyni Daou Hospital in Kayes from January 1, 2018 to December 31, 2020. We included all immunocompetent patients with ulcero-necrotic wounds hospitalized in the department.

Patients with ulcero-necrotic wounds on diabetic, HIV or cancerous grounds were not included. The parameters studied were: etiologies, local care, sequelae and socioeconomic impact.

2. Results

During the study period, 57 patients were recorded, *i.e.* 1.3% of our activities; they were 43 men (75.4%) and 14 women, *i.e.* a sex ratio of 3. The mean age was 40.7 years, with a standard deviation of 8.4 and extremes of 7 years and 80 years. The average consultation time was 25.1 days. The socio-occupational activity was agropastoralism in 65% of cases. The most predominant factors were traditional treatment in 49 cases (86%), followed by neglected traumatic wounds in 34 cases (59.6%) (see **Table 1**, **Figure 1**). The site of the UIPs varied, they were located on the lower limb in 39 cases (68.5%) (see **Table 2**). Antibiograms were performed in 35 cases (61.4%), the most common germ was staphylococcus aureus in 21 cases (36.8%). The clinical signs of severity were hyperthermia in 22 cases (38.6%), severe anemia in 20 cases (35.1%) and tetanus in 2 cases (3.5%). Local care (see **Table 3**) was excision of necrotic tissue in 48 cases (84.2%), for some patients table sugar (see **Figure 2**) was used in 9 cases (15.7%) and maggot

Table 1. Distribution of patients according to contributing factors.

Favouring factors	Effectif	Percentage
Traditional treatment	49/57	86
Neglected traumatic wound	34/57	59.6
Snake bite	6/57	10.5
Squirrel bite	2/57	3.6
Human bite	1/57	1.7
Vascular	2/57	3.6
Depigmenting	2/57	3.6
Erysipelas	5/57	8.7
Escarre	4/57	7
Fournier's Gangrene	1/57	1.7

Table 2. Distribution of patients by site.

Seat	Effectif	Percentage
Lower limb	39	68.5
Upper limb	10	17.5
Trunk	5	8.7
External genitalia	2	3.6
Head	1	1.7
Total	57	100

Table 3. Distribution of patients by local care.

Local care	Effectif	Percentage
Excision of necrotic tissue	48/57	84.2
Antiseptic	57/57	100
Hydrogel	2/57	3.5
Table sugar	9/57	15.7
Asticotherapy	2/57	3.5
Limb amputation	8/57	14
Skin grafting	9/57	15.7



Vascular wound with dry gangrene



Escarre



Neglected traumatic wound Breast abscesses traditional treatment

Figure 1. Favouring factors.

therapy in 2 cases (3.5%) (see **Figure 3**), skin grafting was performed in 9 cases (15.7%) and limb amputation in 8 cases (14%). The evolution (see **Table 4**) was marked by recovery without sequelae in 18 cases (31.6%), recovery with sequelae was observed in 30 cases (52.7%), the sequelae (**Table 5**) were predominantly in



Figure 2. Use of table sugar.



Figure 3. Maggot therapy.

Table 4. Distribution of patients by outcome.

Evolution	Effectif	Percentage
Healing with sequelae	30	52.7
Healing without sequelae	18	31.6
Deaths	9	15.7
Total	57	100

Table 5. Distribution of patients by nature of sequelae.

Nature of sequelae	Effectif	Percentage
Limb Handicap	20	66.7
Cutaneous dyschromia	5	16.7
Scar flange	3	10
Loss of sight in one eye	1	3.3
IMO intermittent	1	3.3
Total	30	100

Limb disability: amputation, stiffness, ankylosis. OMI: edema of the lower limbs.

Table 6. Distribution by hospital management.

Taking charge	Effectif	Percentage
Social Service	35	61.4
Family	17	29.8
Himself	5	8.8
Total	57	100

Table 7. Distribution of socio-economic and professional activity.

Resumption of activity	Effectif	Percentage
The non-takeover	19	39.5
Partial recovery	11	23
Total recovery	18	37.5
Total	48	100

the limbs in 24 cases (80%). The average duration of hospitalization was 38 days. Hospital care was provided by the social welfare service in 35 cases (61.4%) and by the patient's family in 17 cases (29.8%) (see **Table 6**). 19 cases (39.5%) did not fully resume socio-economic and professional activities and 11 cases (23%) partially resumed (see **Table 7**). The overall mortality was 15.7%.

3. Discussion

In our study, the predominant population was male, *i.e.* 75.4% of the cases. This male predominance has been found in the literature [6] [8]. The mean age was 47.3 years, which is identical to those found by other authors [8] [9] [10]. In the African series, young adult males are more frequent, contrary to the European series where elderly (65 - 74 years) female subjects are predominant [11]. The most represented socio-occupational stratum was agropastoralism in 65% of the cases; in Mali this stratum contributes to the gross domestic product of the economy in 44% of the cases [12]. The average delay of consultation was 25.1 days, Traoré A. [8] in Bamako found 1.2 months. This delay in consultation was due to the lack of means and the choice of traditional treatment as first-line treatment. The most common factor found was neglected traumatic wounds (59.6%), which are the entry point for germs. This is identical to other African studies [13]; in Europe, UTIs are of vascular etiology [14] [15].

The lesions were located on the lower limb in 68.5% of cases, in line with other studies [16] [17].

The germ found after antibiotic susceptibility testing was staphylococcus aureus in 36.8% of cases

A. Traoré [8] in Bamako found the same germ in 50.6% of cases. During local care, because of the high cost and the small quantity of hydrogels in relation to the surface of the wound, we resorted to an old practice, which is the use of table sugar in 15.7% of cases, which gave us a good result, with one case of hy-

per-budding. This practice has been studied by Andrew. B. J. [18]. Maggot therapy was used in 3.5% of cases. The maggots were collected from the wound; the wound was cleaned with saline and then the same maggots were placed on the wound with a dressing for 48 hours. This procedure gives a good result on fibrin. The only problem with this treatment is the refusal of patients to undergo this protocol. According to Dumville J. C. [19], maggot therapy significantly reduces the time required for debridement. Self-grafting of the skin was performed in 15.7% of cases in our study; in the literature, this rate varies according to the authors [8] [16]. We performed more skin grafting in pellets, which is inexpensive and is done under local anesthesia. Healing with sequelae was 52.7%, the total non-resumption of socio-professional activity was observed in 39.5% of cases. Hospital care was provided by the social welfare service in 61.4% of cases, which confirms the difficulty of managing PUN. The average duration of follow-up was 2.7 months; A. Souissi [20] in Tunisia found 11.35 months, which could be explained by the etiology of PUN. Depending on the nature of the after-effects, patients were referred to the orthopaedic rehabilitation center, physiotherapy or the orthopaedic trauma department. The overall mortality in our series was 15%, it has not been mentioned by other authors, during our study the deaths were due to tetanus and sepsis.

4. Conclusion

Our study has allowed us to show that ulcero-necrotic wounds are complex to manage. Poverty is a factor of delay in consultation and difficulty in management. The after-effects are sometimes disabling and can influence the socio-professional and economic activity of the patients for life.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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