

P.1.14

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Référence : Clinical Research in Dermatology. Volume 1(1)

Research Article

Epidemiological, Clinical and Therapeutic Profile of Buruli ulcer (BU) in the BU Detection and Treatment Centers (CDTUBs) of Allada and Lalo (Benin)

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Abstract

Severe and necrotizing infectious dermatitis can lead to disabling sequelae, Buruli ulcer is found in swampy and poorly drained areas. As Benin is one of the affected countries in West Africa, a study was initiated to describe the epidemiological, clinical and therapeutic characteristics of Buruli ulcer in the Buruli Ulcer Detection and Treatment Centers (CDTUBs) of Allada and Lalo (Benin).

This was a retrospective, descriptive study conducted from January 2005 to December 2016 in the Allada and Lalo CDTUBs. Included were patients with *Mycobacterium ulcerans* positive PCR, category 1 and category 2 lesions, treated according to WHO recommendations, healed and with available and complete data.

A total of 221 patients were retained. The average age of the patients was 17.75 ± 15.63 years. The swampy environment was the living environment for 39.82% of patients. Ulcer was the most common type of lesion encountered (71.04%). Surgery was performed in 177 patients (80.09%). The average healing time was $119.5 \text{ days} \pm 66.31$ days.

At the end of this study, it appears that children were the most affected, the population affected by Buruli ulcer is predominantly female. Ulcers were the most common clinical forms and healed less quickly than non-ulcer lesions.

Introduction

Severe and necrotizing infectious dermatitis can lead to disabling sequelae, Buruli ulcer is found in swampy and poorly drained areas. Buruli ulcer is caused by [1] and affects poor people in rural areas. It has been on the rise in recent years. According to WHO it is the third most common mycobacterial infection in humans after tuberculosis and leprosy [2]. As Benin is one of the affected countries in West Africa, a study was initiated to describe the epidemiological, clinical and therapeutic characteristics of Buruli ulcer in the Buruli Ulcer Detection and Treatment Centers (CDTUBs) of Allada and Lalo (Benin).

Patients and methods

This was a retrospective, descriptive study conducted from January 2005 to December 2016, a period of 11 years in the Allada and Lalo CDTUBs. Included were patients with *Mycobacterium ulcerans* positive PCR, category 1 and category 2 lesions, treated according to WHO recommendations, healed and with available and complete data. All patients treated outside the study period or who had a relapse were not included in the study. The data were collected on a counting sheet and analyzed using STATA version 11 software. Text processing, tabulation and graphics were done using Microsoft WORD and EXCEL software version 2013.

Results

A total of 221 patients met our inclusion criteria, 145 (65.61%) of whom were managed at the Allada CDTUB and 76 (34.39%) at

the Lalo CDTUB. The average age of the patients was 17.75 ± 15.63 years, with the largest number of children (68.78%). There is a female predominance (52.04%) and the sex ratio (M/F) was 0.92. The swampy environment was the living environment for 39.82% of patients. Schoolchildren and students were the most represented (28.96%). The average time to consultation was 116 days and 49.77% of patients consulted between 36 to 91 days after the first signs appeared. Ulcer (Figure 1) was the most common lesion (71.04%) and the majority of patients were in category 2 (81.90%). Pelvic limbs were affected in 50.23% of patients. Surgery was performed in 177 patients (80.09%). Of these, 48 (27.12%) had plaques, 1 (0.56%) had nodule and 128 (72.32%) had ulcers. The drug treatment resulted in the healing of 44 patients. The healing time ranged from 11 to 350 days with an average of $119.5 \text{ days} \pm 66.31$ days. It was 128.25 ± 66.50 days for category 2 subjects and 79.70 ± 49.20 days for category 1 subjects. Sequelae (Figure 2) after healing were present in 18.95% of patients.

Discussion

Children accounted for 68.78% of patients. This predominance of

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Received: November 14, 2018; Accepted: December 05, 2018; Published: December 25, 2018

Keywords: Buruli ulcer; lesion category; healing time; Benin.



Figure 1: Ulcer.



Figure 2: Sequelae after healing.

children under 18 years old was reported by [3,4,5]. This predominance of children is explained by their constant exposure during recreational activities in swampy areas. There was a female predominance as well as [3,6], whereas [7] had a male predominance as well as [8]. But according to [9], Buruli ulcer affects children under 15 years old without sex preference. But it affects women more often than men in adulthood. Schoolchildren, pupils and students were the most affected (28.96%), which is in line with the study by [10] who reported that BU affects school-age children. Swamps were the living environment for 39.82% of patients; this only confirms the existence of endemic outbreaks of BU around aquatic ecosystems [3,8,9,11,12]. The time between the appearance of lesions and consultation is not uniform in the literature. A predominance of ulcers is found in this study as well as in the literature [2,3,8,13]. This predominance of the ulcerated form could be explained by the fact that it is the ulceration that often worries the patient and leads him to consult. Members are the most affected in our study, which is consistent with the data in the literature [3,11,12,14]; this seems normal because the members are open areas and therefore more exposed to contamination. Of the 221 patients, 44 are cured with medical treatment alone and 177 are cured after medical and surgical treatment. The healing time for our patients was approximately 04 months (119.47 ± 66.31 days). The average healing time increased by 33.56 days for patients who received surgery compared to those who did not receive surgery ($p=0.002$). This could be explained by the fact that it takes 2 months of medical treatment before any surgery according to WHO recommendations. In the

end, the surgical procedure is delayed by 2 months due to systematic antibiotic therapy. The healing time varies from one author to another; [7] found an average healing time of 120 days as did [4]; however, [3] found about 03 months (81 ± 46.70 days), [15] 84 days and [13] about 5 months. Healing occurred with sequelae in 18.95% of our patients while [16] recovered 25% with sequelae.

Conclusion

Buruli ulcer is a severe skin infection affecting mostly populations living in swampy areas, female and under 18 years old. Ulcerated forms are the most common and heal less quickly than non-ulcerated lesions. There are fewer sequelae with WHO therapeutic standards.

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