

Epidemiologic Observations on Cases of Buruli Ulcer seen at St. Martin's Hospital in Amansie West District in Ghana

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ABSTRACT

This article describes 50 cases of Mycobacterium ulcerans infection (Buruli ulcer) treated at St. Martin's hospital in Amansie West district of Ghana from September 21st to November 30th 1992. Of these 50 cases, 58% were females, 66% were children under 14 years of age, and 76% were not immunized with bacille Calmette-Guérin (BCG). Painless swelling was the most common presenting complaint (80%). It was mainly found on the lower limb (48%). Knowledge of the causal agent among the cases was poor. They relied on herbal preparation (54%) to treat the disease. Research to find an effective treatment for this calamity is urgently needed.

INTRODUCTION

The necrotizing skin ulceration caused by *Mycobacterium ulcerans* was first described by MacCallum¹ among farmers from Bairnsdale, Australia in 1948. The same condition was recognized among farmers in Buruli county in Uganda.² This infection is commonly known as Buruli ulcer. Similar cases have been reported in Zaire,^{3,4} New Guinea,⁵ South East Asia,⁷ Nigeria,^{4,8} Ivory Coast,¹⁰ Cameroon,¹¹ and Benin.¹² The first report on Buruli ulcer from Ghana came out in 1971,¹³ followed by a second report in 1989.¹⁴

The disease is distributed in riverine areas or in swampy areas and has been associated with a special grass, the *Echinochloa pyramidalis*.¹⁵

Based on the work of the Uganda Buruli Group,²⁴ the evolution of the disease can be divided into three

stages, a pre-ulcerative stage, an ulcerative stage and healing stage. During the pre-ulcerative period, patients present with a painless nodule. However cases with extremely painful²⁷ or itchy nodule⁹ have been reported. The next stage is the discharge of the necrotic content, forming a large painless ulcer with large intractable and undermined edges and which continues to grow at the circumference. It is accepted that the tissue necrosis is the result of the exotoxin produced by the bacteria.¹⁴ Fulminant forms have been described but they are rare. This evolution is not accompanied by serious systemic signs such as fever or lymph node involvement.

The last stage of the disease is the healing processes which occur at any stage of the development and is complicated by muscle contractures limiting joints mobility and disfiguring scars. The disease, which has an incubation period of 6 to 10 weeks, lasts 4 to 36 months.^{14,28}

Various regimens have been tried to treat Buruli ulcer patients. Anti-tuberculous and anti-leprosy drugs have been actively used without satisfactory results.^{16, 29} The protective effect of BCG vaccination among tuberculin-negative individuals is established.²⁰ Anderson²¹ in 1965 showed that early recognition and surgery were the mainstay of treatment for Buruli ulcer.

During the past 5 years, Buruli ulcer has become endemic in Amansie West district of Ghana. The disease is blamed for reduced productivity of affected farmers, high school drop-out among school children, and costly hospitalization for the victims. The present study was undertaken to provide basic epidemiologic information regarding Buruli ulcer patients who reported at St. Martin's hospital in Agroyesum village in West Amansie district between September 21st and November 30th, 1992.

METHODOLOGY

All patients who were treated for Buruli ulcer at St. Martin's hospital in Agroyesum village in Amansie West district during the study period were included in



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were affected in 4% of the cases. A combination of these locations were found in 5 patients (10%).

Patients' knowledge about the cause of the disease and their behaviour towards the disease is shown in Table 3. None of the patients interviewed knew the exact cause of the disease. About 42% of patients did not know any causal factor, 26% attributed the disease to drinking and/or using the stream water polluted with chemicals used for illegal mining, 22% attributed the disease to the activities of witches, and 10% to insect bites, cuts and thorn pricks.

Table 3:
Knowledge and practice among Buruli Ulcer patients

Characteristics	Number of patients N = 50	%
Perceived casual agent		
Polluted water	13	26.0
Activities of witches	11	22.0
Insect Bites	2	4.0
Cuts and thorn pricks	3	6.0
Do not know	21	42.0
Treatment used before hospitalization		
Tobacco leaves	20	40.0
Self medication with antibiotics	17	34.0
Drugs administered		
at dispensaries	6	12.0
Native treatment	7	14.0

Most patients (54%) relied on herbal preparation to treat the disease. The commonly described treatment was the application of warmed tobacco leaves on the wound (40%).

The approximate month of the disease onset was explored. About 70% of patients said the symptoms started in August, 24% said in October, and 6% in September. Based on an incubation period of 6 to 10 weeks, it is probable that the infection may have taken place around April-June. This period corresponds with the raining season in Ashanti region.

DISCUSSION

This study showed a high prevalence of Buruli ulcer among females (58%) and children below 14 years of age (66.0%). This finding has been reported previously in the literature.^{12,22,23} In traditional African societies, the responsibilities of men and women in farming are well defined. The men weed the farm whereas the women plough the land and harvest the crops. Thus women are more exposed to any harmful agent harbored in the soil than men. The high prevalence of the disease among women could be explained by the differential of exposure. Buruli Ulcer affected mostly children between 5 and 9 years of age. This observation agrees with finding of the Uganda Buruli Group²³ which reported more cases between 5 and 14 years. However, Olowasanmi⁷ in Nigeria found a high incidence among young adults of 18 years.

There was no evidence of BCG immunization among 76% of the studied population. Only 24% of patients who received BCG got the disease. The possible protective effect of BCG immunization against Buruli Ulcer was observed elsewhere.^{20,24} There is therefore a need to educate the population on the importance of immunization in general, which incidentally takes care of BCG immunization as well.

Most of the patients studied presented themselves at St. Martin's hospital for a painless swelling. However, other forms such as persistent itching and painful swelling were also reported. Persistent itching as presenting symptom in Buruli Ulcer was documented in Nigeria⁷ and Zaire⁵ where it is called "itching stone" and "inpa mudi" respectively.

The present study agrees with findings by Barker²⁵ that the skin ulcer can occur on any part of the body. The skin ulcer was more frequently located on the exposed extremities of the body than on the trunk or on the head. Lower limbs were the most affected areas as described by Olowasanmi.⁷ The preferential location of the ulcer on the lower limbs support the hypothesis that the infection result from direct contact with the soil. Although multiple lesions are known to be rare^{8,22,23}, it was observed in 10% of our patients. This can be explained by the fact that this study dealt with a highly selected population in a hospital. The absence of severe constitutional symptoms (fever, enlarged lymph node) suggests that systemic spread of *M. ulcerans* to skin from a systemic focus is unlikely. The necessity for wearing shoes while going to the farm can never be overemphasized.

The data showed the need to educate the population about this calamity since the majority of the patients

interviewed did not know the cause of the disease. It is therefore understandable that proper measures were not taken by the general population to protect themselves.

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