
Research Article

Burden Of *Mycobacterium ulcerans* Disease (Buruli ulcer) In Ogbaru District, Anambra State, Nigeria

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Abstract:

Background: The burden of Buruli ulcer in four communities of Ogbaru district, Anambra State, Nigeria was investigated.

Methods: Swabs were collected from the undermined edges of ulcerative lesions. Diagnosis was made by direct smear microscopy according to the WHO guidelines.

Results: Eleven new Buruli ulcer cases were identified. Age of the patients ranged from 4 to 75 years, with a mean age of 15.5 years. Overall, 81.8% of cases presented with one lesion and 18.2% cases with two lesions. The lesions occurred mostly on the leg (91%) and arm (9%). Majority of the lesions (90.9%) were ulcers and males were more infected. The main reasons for not seeking diagnosis and treatment in a hospital were that Buruli ulcer was attributed to witchcraft and the belief that treatment of Buruli ulcer in hospital was ineffective.

Conclusion: Buruli ulcer is prevalent in Ogbaru. Enhanced enlightenment of the populace will be a good measure to infection prevention and control.

Keywords: Buruli ulcer, *Mycobacterium ulcerans*, Burden, Ogbaru district, Anambra State, Nigeria.

Introduction

Buruli ulcer (BU) is a necrotizing bacterial infection of skin, sub-cutaneous tissue and bone caused by *Mycobacterium ulcerans* [1]. Buruli ulcer is one of the neglected tropical diseases with a poorly known global prevalence. It mainly affects remote rural African Communities [2]. In West and Central Africa, majority of cases have been reported from Benin, Cameroon, Cote d' Ivoire, Democratic Republic of Congo and Ghana [2,6].

Buruli ulcer has emerged in recent times as an increasingly important cause of human morbidity partly due to environmental changes [7]. It begins typically as a painless nodule or papule in the skin, which is often ignored by the patient. This nodule if left untreated evolve into massive skin ulcer with undermined edges, often leading to invalidating sequelae [8,9]. Ulcers are chronic and mainly located on legs and arms and other exposed parts of the body such as head and neck [10]. The destruction of the tissues is caused by mycolactone, a toxin produced by the organism [11]. All age groups are affected but a higher prevalence is found in children younger than 15 years of age [1,3].

The mode of transmission of Buruli ulcer diseases is not known, though Buruli ulcer has been found in biofilms, aquatic insects, water bugs, fish and wildlife [12]. The risk factors for Buruli ulcer include proximity to stagnant or slow-flowing bodies of water, not wearing protective clothing and poor wound care [8].

To date, less than an hundred BU cases have been reported in

Nigeria, a country with over 162 million people [13-15]. Buruli ulcer cases were first reported in Benue State, in 1967 and afterwards from Ogoja, Cross River State; Ibadan, Oyo State; Ebonyi, Enugu, Ogun and Anambra States. *Mycobacterium ulcerans* disease (Buruli ulcer) therefore, is grossly underreported in Nigeria. This is due to inadequate public health facilities to diagnose and treat the disease.

Given the socioeconomic and cultural circumstances of those most affected, we sought to estimate the burden of Buruli ulcer in Ogbaru district, Anambra State and evaluated the health-seeking behavior of patients towards the disease. Buruli ulcer is called by such names as "Enyi ule", "Acha ele" in the local parlance of Ogbaru people.

Methods

Study Areas

This active case finding was conducted in four communities of Ogbaru, Ogbaru Local Government area, Anambra State. The Communities are Odekpe, Atani, Ogwuaniocha and Ogbakuma. Ogbaru is made up of fifteen communities. Ogbaru is drained by several inland waters, most of which enter into the River Niger. The people are mainly fishermen and farmers.

Study design

This was a community-based cross-sectional survey. Outreach/ Sensitization activities on Buruli ulcer were held at

the village squares, town halls and churches in the communities with the approval of community/church leaders. Members of the communities both old and young attended. With the assistance of Community Health Workers trained under National Tuberculosis and Leprosy Control Programme and Local Government TBL Supervisor, screening for all forms of Buruli ulcer disease was carried out. Persons suspected of having BU lesions (chronic ulcers that have failed to heal) were invited for evaluation.

Sample collection and Laboratory Confirmation.

Swabs were collected from the undermined edges of ulcerative lesions followed by laboratory testing. Diagnosis was made by direct smear and microscopy using the WHO guidelines (16). Confirmed cases were referred to PHC I Okpoko for management.

Ethical Approval

Ethical approval for the study was obtained from Ogbaru Local Government Ethical Committee. All patients consented to participate as well as approved publication of their clinical photographs.

Results

A total of 11 newly-diagnosed BU cases were identified from Odekpe, Atani, Ogwuaniocha and Ogbakuma. Age of the patients ranged from 4 years to 75 years, with mean age of 15.5 years. Exactly 3(27.3%) patients were children ≤15 years of age.

Overall 9(81.8%) cases presented with one lesion and 2(18.2%) cases with 2 lesions. The location of one lesion was predominantly on the leg (fig 1)



Figure 1: Lesion on both legs



Figure 2: Lesion on the Arm

Majority of the lesions (90.9%) were ulcers. The other clinical form of BU seen was oedema (9.1%). No other form of the disease was found in the study areas. The lesions occurred as follows: leg (91%), arm (9%), trunk (0%). The lesions occurred most in males (63.6%) vs females (36.4%) (Table 1).

Table 1: Demographic and Clinical Characteristics of Buruli ulcer Cases in Ogbaru District

Characteristic	Buruli ulcer cases (%)
Gender	
Males	7(63.6)
Females	4(36.4)
Age(years)	
<15	3(27.3)
>15	8(72.7)
No of lesions	
One	9(81.8)
Two	2(18.2)
Location of lesions	
Leg	10(91.0)
Arm	1(9.0)
Trunk	0(0.0)
Clinical form	
Ulcer	10(90.9)
Oedema	1(9.1)
Nodule	0(0.0)
Classification of cases	
New	11(100)
Recurrent	0(0.0)

The reasons given by the patients why they did not seek diagnosis/treatment in hospitals were varied. Seven (63.6%) patients answered that BU was from witchcraft, 2(18.2%) preferred traditional/native treatment and 2(18.2%) thought that medical treatment of BU disease was ineffective.

Discussion

We found a total of 11 new BU cases in four communities of Ogbaru in Anambra State, Nigeria. The implication is that BU disease is grossly underestimated in Ogbaru /Anambra State. It is therefore important that Buruli ulcer case finding activities be stepped up since in a previous assessment [15], BU cases were confirmed from other parts of Anambra State.

The distribution of the lesions on the body showed a higher concentration on the limbs, especially the lower limbs (91.0%). This results supports the findings of other workers [2,5,6]. It is also consistent with the fact that *Mycobacterium ulcerans* is an environmental pathogen transmitted probably close to the ground, in an aquatic environment, such as prevails in Ogbaru [17].

Majority of BU cases in Ogbaru were ulcers. This is similar to studies in Ghana, Cameroun and DR Congo [2,4,5]. It is not surprising since patients report late to formal sectors for treatment. Finding ulcers with undermined edges may have also aided quality sample collection and the higher rate of laboratory confirmation of clinical cases. The early forms of the disease such as nodules, papules or plaques were not found in this study. Such early forms were likely to be ignored by patients and inexperienced community health workers.

While it has long been recognized that majority of patients in the African Buruli ulcer endemic settings are children with a peak of BU incidence between 10 and 14 years [3], we found a mean age of 15.5 years. Our study agrees with the findings in Benin [8,18]. Lesions occurred more in males than females. Some previous studies did not however, observe any statistical difference in the occurrence of cases among gender [3, 9, 19].

Due to the nature of *Mycobacterium ulcerans* disease and its stigmatization, majority of the patients believed that the disease was a result of witchcraft and others that medical treatment was ineffective and so preferred traditional healers. Information on free diagnosis and treatment of Buruli ulcer and efficacy of antibiotic therapy will reduce this barrier.

Conclusion

We found 11 new BU cases in 4 Ogbaru communities. Buruli ulcer is prevalent in Ogbaru Local government Area of Anambra State. Enhanced enlightenment of the populace about *Mycobacterium ulcerans* disease will be a good measure at controlling the disease.

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