

Full Length Research paper

Managing the Buruli ulcer morbidity in the Amansie West District of Ghana: Can indigenous knowledge succeed?

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Buruli ulcer is a disease that eats through the skin, muscle and bone, leaving victims with disfiguring and debilitating craters. This study was conducted in the Amansie West District, which is the most endemic area in Ghana. The purposive sampling technique was used to select the study population. Data was collected using in-depth interviews with the help of questionnaires consisting of both closed and open-ended questions, in addition to focus group discussions. The research revealed that there are knowledge gaps on how the mycobacterium enters the body, although it is clear the bacterium is unable to do so by itself and therefore, curse from the gods and witchcraft were among the perceived causes of the disease. It was also revealed that indigenous form of treatment such as herbs, clay and honey are widely used as a treatment option. Though their effectiveness and efficacy has not been proven scientifically, the positive responses from patients suggests that its reliability cannot be doubted. There is no drug for the treatment of Buruli Ulcer and though certain antibiotics have been tried, their efficacy is still in doubt. The mainstay of treatment is surgical excision of the lesion and this is both costly and dangerous, leading to the loss of considerable amounts of tissues or disability and thus discouraging patients from seeking treatment. This research concludes that the local terminologies, beliefs and all the names associated with this indigenous knowledge should be documented and understood as an effective intervention for treating and managing Buruli ulcer.

Key words: Indigenous, Buruli ulcer, treatment, mycobacterium, herbs.

INTRODUCTION

Buruli ulcer (BU) is the third most common mycobacterium disease after tuberculosis and leprosy. It was first detected in 1948 among farmers in Australia (where it is known as Bairnsdale ulcer). Buruli ulcer incidence is highest among West African nations (WHO, 2001), with cases in some countries exceeding those of tuberculosis (TB) and leprosy (Amofah et al., 2002). Up to 16% of villages are affected in Cote d'Ivoire (WHO, 2001), and Benin has recorded 4000 cases since 1989 (Portaels and Meyers, 1995) (Lagarrigue et al., 2000). A 1999 national survey in Ghana identified over 6,000 cases, making BU the second most prevalent mycobacterial disease (after TB) in that country (Amofah et al., 2002). In West Africa, nearly 25% of people

infected are left permanently disabled (Johnson et al., 2005). There is also evidence of vast under-reporting of the disease. The incidence of infection has increased dramatically over the past decade, even after considering improved reporting rates, largely as a consequence of environmental changes (Connor and Lunn, 1965). Approximately 31 sub-tropical and tropical regions have reported cases of Buruli ulcer (Kotlowski and Portaels, 2004). These countries include: Angola, Australia, Bolivia, Burkina, Faso, Cameroon, China, Congo, Democratic Republic of Congo, Equatorial Guinea, French Guyana, Gabon, Guinea, French Guyana, Gabon, India, Indonesia, Japan, Liberia, Malaysia, Mexico, Papua New Guinea, Peru, Sierra Leone, Sri Lanka,

Sudan, Suriname, Togo and Uganda. A few isolated cases have been reported in non-endemic areas in North America and Europe, but these cases have been linked to international travel (Duker et al., 2004).

Buruli ulcer silently eats through the skin, muscle and bone and in its worst form, leaves victims with disfiguring and debilitating craters. However, the list of questions surrounding Buruli Ulcer is daunting (Oliver and Webster, 1990). No one is sure where the bacterium lives in the environment. It is also a mystery how it enters the body, although it is clear the bacterium is unable to do so by itself.

Buruli Ulcer was first brought to public attention in Ghana in 1993 when severe cases were reported from the Amansie West district of Ashanti Region in August (MOH). Specifically, the most affected town is Tontokrom, although earlier cases have been reported from the Densu and Afram plains, Bayley (1971) and Van der Werf et al. (1989). In Ghana, a national survey conducted in 1999 found 6000 cases and showed that Buruli ulcer is in all 10 regions. Since then, cases have come from many districts and about 2800 new cases have been recorded. In 2003, 739 cases were reported, while for the first half of 2004, 562 new cases were reported. Today, 30 districts regularly report on the disease to the National Control Program (Ministry of Health, 2011). The overall national prevalence rate of active Buruli ulcer is 20.7 per 100,000 of the population, but as high as 150.8 per 100,000 (Ministry of Health, Ashanti Region). The worse affected regions are Ashanti, Central, Brong Aharfo, Greater Accra and Eastern.

Currently, Ghana is the second most endemic country recording about 1,048 cases of Buruli ulcer after Cote d'Ivoire globally (WHO, 2012). Buruli ulcer has lost a profile in public health, hence finding it difficult to even attract donor support. Meanwhile, this is a disease affecting people who live on less than a dollar a day. According to a recent WHO statistics, the total population of Buruli ulcer cases recorded globally including that of Ghana is 5,076, with Africa being the worst affected.

Signs and symptoms

Buruli ulcer infection may begin with a painless, raised skin lesion or papule and infection may extend from the skin into the subcutaneous tissue and often invades the underlying muscle tissue. In other cases, it presents as edema or swelling and covers an extensive area of the skin. The tissue underlying these areas of edema is necrotic and the edematous region usually breaks down to form a large ulcer.

The disease can also present itself as a firm, painless plaque of a well-demarcated lesion of irregular edges with a reddened or discolored appearance. Ulceration can be extensive and disfiguring, often affecting 50% or

more of a limb. Because of the local immune-suppressive properties of mycolactone, the disease progresses with no pain and fever, which may partly explain why those affected do not often seek prompt treatment. However, without treatment, massive ulcers result, with the classical and undermined borders. Sometimes, the bone is affected, causing gross deformities. When lesions heal, scarring may cause restricted movement of limbs and other permanent disabilities in about a quarter of patients. The aim of this research is to investigate the treatment options available for BU patients, especially from the indigenous perspective.

METHODOLOGY

Study setting

Location and size

The Amansie West District is located in the south-western part of Ashanti Region (Figure 1). The District was carved out of the Amansie East District in 1989 as part of the then government's decentralization policy. It shares boundaries with the Amansie East District in the west, Atwima Mponua District in the east, Atwima Nwabiagya District in the north and Amansie Central in the South. The Amansie West District falls within latitudes 6° 35' and 6° 51' North and Longitudes 1° 40' and 2° 05' West (AWDP, 2004). The District covers an area of about 1,364 square km. and forms about 5.4% of the total land area of the Ashanti Region (AWDP, 2004). The entire District comprises 160 communities with Manso Nkwanta as the District capital. It is divided into 12 local councils, 21 area councils and subdivided into 48 electoral areas. The major towns which serve as growth poles include Manso Nkwanta, Mpatuam, Manso Mem, Manso Atwere, Edubia, Watreso, Abore, Keniago, Essuwin, Ahwerewa and Datano.

The District is underlain by Lower Proterozoic volcanic greenstones with intervening sedimentary rocks and granitoid intrusions (Robb et al., 1999). The main soil type of the district is ferric fluvisols. The district lies entirely in the rainforest belt and exhibits most semi-deciduous characteristics. Furthermore, the district is very rich in forest resources, such as timber, herbs of medicinal value and fuel wood. It also abounds in different species of tropical hardwood, notably Odum, Mahogany and Sapele. There are four main forest reserves in the district, these are: Oda River Forest Reserve, Apamprama Forest Reserve, Gyeni River Forest Reserve and Jimira Forest Reserve.

Study population

The study population consisted of Buruli ulcer patients who were medically diagnosed and whose disease had reached the ulcerative stage. An analytical case-control study was used to conduct the investigation. Data for the study was collected from the three most endemic communities of the Amansie West Districts as presented in Table 1. The communities are Tontokrom, Kaniago and Edubea. The purposive sampling technique was used to select the study population.

This technique was preferred because the study subjects were already defined in hospital record forms. Data was collected using in-depth interviews with the help of questionnaires consisting of both closed and open-ended questions. In addition, focus group discussions were held with interest groups such as mothers who

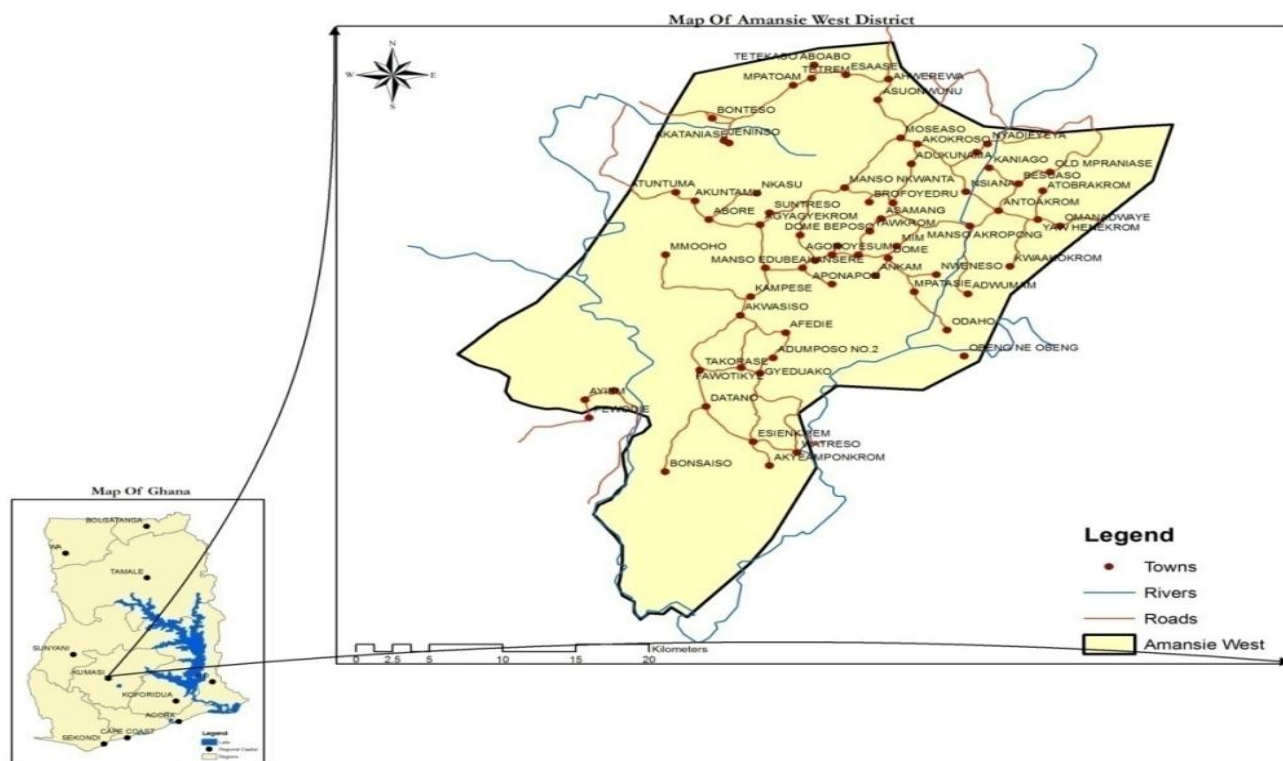


Figure 1. Map of the Amansie West District. Source: Field work.

Table 1. Sample distribution.

Community	No. of male	Percentage (%)	No of female	Percentage (%)	Total no. of participants
Tontokrom	22	44	28	56	50
Kaniago	23	46	27	54	50
Edubea	21	42	29	58	50
Total	66	100.0	84	100.0	150

Source: Field work.

were entirely measured with the respondent’s responses and observation for reasons of logistics.

RESULTS

The exact causes of Buruli ulcer in the Amansei District is still a mystery. However, the causes may not be different from the other endemic areas of the world, although the local conditions may vary from one endemic area to other. From the research, 27.3% were not able to identify the causes of the disease in the community, 30% attributed the cause of the disease to curse from the gods of the land. They believe that the infected patients might have incurred the displeasure of the gods or they are paying for the wrongs committed by their fore fathers.

Moreover, 17.7% attributed the causes to witchcraft, whereas 25% attributed the cause to environmental factors.

The perception of cause influenced the type of treatment option sought by patients. In a focus group discussion (FGD), one infected woman had this to say

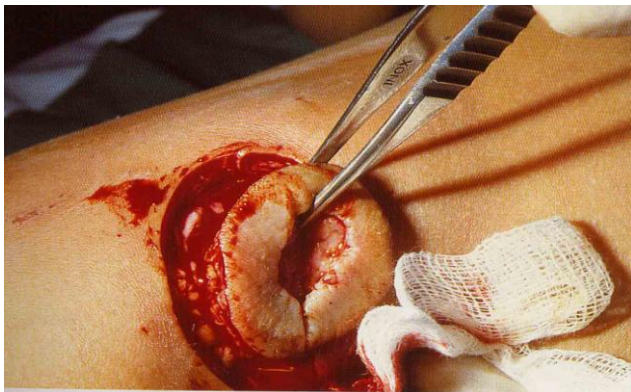
“I do not understand how I got the disease because none of my family members have it even though we live in the same house, drink water from the same source and virtually share everything in common. Because am the only person infected, the family believes it is the work of the evil spirits”.

This assertion was generally agreed by all. A young male infected person also had this to say in another FGD.

Table 2. Preferred choice of treatment.

Source of treatment	Percentage (%)
Orthodox	35
Traditional	65
Total	100

Source: Field work.

**Figure 2.** Surgical excision of ulcerative lesion.
Source: WHO (2000).**Table 3.** Species of herbs for treatment of Buruli ulcer.

Scientific name	Common name	Local name
<i>Barassus aethiopum</i>	Fan palm	
<i>Azadirachta indica</i>	Neem Tree	
<i>Leea guineensis</i>		Agyaben
<i>Cleistopholis patens</i>	Salt and oil tree	
<i>Ficus asperifolia</i>	Sand paper tree	Onyannkyeren
<i>Gardenia ternifolia</i>		Akpetekplebii
<i>Mitracarpus villosus</i>		susubiribi

Source: Field work.

“I certainly believed that it is the work of the supernatural forces, my late grandfather told me that there was once a popular fetish priest in this village who wanted to marry my mother but our family members objected. The fetish priest cursed our family members; it is believed that my sickness is the result”.

The responses from the focus group discussions (FGD) indicate that the people in the community do not know the exact cause and mode of treatment. This is however, contrary to a study by Asiedu and Etuful (1998). They contended that the disease is caused by a multiplicity of factors which can be grouped under socio-economic and

physical factors. They listed some of the socio-economic factors as poverty, poor access to quality healthcare, poor education and so on. The physical factors included excessive flooding, deforestation, mining activities and many more. In their survey, these factors were responsible for the high presence of Buruli ulcer in the Amansie West District.

Treatment

Different methods of treatment are used depending on the level of income of the infected, beliefs, religious background, as well as the level of information available to the infected. There are two options of treatment namely scientific or orthodox method and traditional method. As shown in Table 2, 65% of the patients indicated they use traditional medicine as source healing than any other available method. These patients gave various reasons for their choice of treatment, such as no health facility in the community, long distance between place of residence and the nearest health facility, inadequate funds and many others. On the other hand, 35% relied on orthodox medicine for treatment. Again, the perceived cause of the disease influenced the type of treatment sought. The research also showed that cases of the ulcerative stage of the disease were high. The high cases of ulcer were because most of the patients did not seek early treatment due to the high cost of surgical treatment, fear of surgery and concerns about the resulting scars and possible amputations, disfiguration, and stigmatization.

The management of Buruli ulcer is recognized to be frustrating and often unrewarding. The chronic and often recurrent nature of the ulcer makes it expensive to manage both for the patient and the health service providers. In the absence of an effective drug treatment of the disease, the mainstay of treatment is surgical excision of the lesion (Figure 2). This is both costly and dangerous, leading to the loss of considerable amounts of tissues or disability. Again, the research revealed that heat treatment and hyperbaric oxygen therapy has also had clinical success, but is not practical for use in rural areas. Early detection of nodules and surgical excision of small lesions could prevent complications (WHO, 2000). Several anti-mycobacterial agents have *in vitro* activity, but no single compound has proven regularly useful for treatment (WHO, 2001). Current research indicates that a combination of amikacin or streptomycin and rifampicin can kill *Mycobacterium ulcerans* cultured from human lesions (Johnson et al., 2005). Majority of the patients have therefore sought treatment from indigenous sources. Two types of indigenous treatment options were identified by the researcher, and these were treatment with herbs and treatment from spiritualist. These two options, however, played complementary roles as none



Figure 3. A patient receiving traditional treatment from a native doctor.

was mutually exclusive.

Herbal treatment

The results indicate that various species of herbs are combined to offer effective treatment for Buruli ulcer. Some of the common herbs are listed in Table 3. In an interview with one herbalist to find out the right combination of herbs and the mode of administration, he had this to say:

“as for the combination of trees, I will not tell because that is my secret but with the administration, I spread the herbal paste in the area of the ulcer and one must go through this procedure for three to eight months, depending on the state of the disease before there is complete healing”.

Though the effectiveness and efficacy of this method could not be proven by the researcher, the high level of patronage by patients could be an indicative of its ability to treat the disease. One patient who had gone through the treatment from the herbalist explained why she chose the option.

“ I first went to the hospital only to be told that I must go and look for money and then come for surgical operation but how do I get the money? Here nothing is paid until one sees improvement in ones condition”.

Again the permanent skin scare and sometimes the

contractures resulting from skin grafting was enough reason for a twenty-eight year old woman to seek treatment from indigenous source:

“my brother went to do the surgical operation and has been deformed permanently because part of the skin was cut to replace the destroyed one”. “With this man if he heals you, there are no traces of the disease”.

Patients using this option were further interviewed as regards the efficacy of the treatment. A twenty year old man had this to say:

“before I came here, my leg was swollen and very painful, at a point my friends said if I go to the hospital, my leg will be amputated, but since I came here, the pain has reduced drastically, the swelling is gone and as you can see I am getting healed. This man is really good”.

Another native doctor revealed another dimension of their activities. He, unlike his colleagues, adds another dimension to the herbal treatment. He adds clay to the herb to aid treatment (Figure 3). Special clays which have high content of calcium and sodium are used for the treatment of the disease. The clay first absorbs the toxins (heavy metals, free radicals, etc) attracting them to its extensive surface area where they adhere and are absorbed. Healing clays do not only draws toxic materials from the body, but also reduces pain and infection on wounds.

The activities of faith based spiritual leaders were considered for the study as the second form of indigenous

treatment. The research concentrated on a popular spiritual leader because of the claimed potency of his concoctions. He uses honey to treat patients. According to him, the disease has spiritual connotations and therefore he communicates and receives direction from the spirits before the honey is used. One patient at his center had this to say:

“anytime he picks the honey, he makes some recitation before he spreads it on my affected hand. I can see my situation has improved and I trust that he can do it because he has done for many others”.

Honey had been found to treat wounds rapidly, replacing sloughs with granulation tissues. It also promotes rapid epithelialization and absorption of edema from around the ulcer margins.

DISCUSSION

This study investigated the role of indigenous knowledge in the treatment of Buruli ulcer morbidity in the Amansie West District, in the Ashanti Region of Ghana. Using herbs for its therapeutic properties has been part of the Ghanaian livelihood since time immemorial. It is an accepted and unquestioned way of life perceived to be practiced in almost every Ghanaian home. The use of herbs links the living and the dead, the spiritual and physical, the seen and the unseen and the natural and the supernatural. In view of this, many rituals surrounded the use of herbal medicine. These rituals were meant to seek the favor of the ancestors, who are believed to have the ability to diagnose and heal. It is the belief among most indigenous Ghanaians that illnesses were the results of disobedience to the ancestral spirits. So for one to be fully healed, there must be forgiveness from the ancestors. It is for this reason that majority of traditional healers performs spiritual incantations before administering their concoctions.

Honey, which is one of the treatment options, is known to have bactericidal, bacteriostatic and anti-fungal activity. According to Molan (1998), the various antimicrobial activities in honey are achieved through its osmotic effect; it is characterized by a pH value of between 3.2 and 4.5, which is low enough to inhibit many pathogenic growths. The major anti-microbial activity in honey was found to be due to the presence hydrogen peroxide. The use of traditional method in the management of Buruli ulcer has gained grounds in the endemic areas of the Amansie West District of Ghana. Typical among the traditional methods are the use of clay and herbs. Although the effectiveness and efficacy of the traditional method has not been proven scientifically, response from majority of the patients covered in this research suggest that the traditional treatment is very

effective. It is believed that a combination of these herbs provide liquid substances that when properly applied could heal the wounds.

Conclusion

From this research, it is about time indigenous knowledge was given its proper place in the management of Buruli ulcer. Comparatively, the traditional method could be cheaper and readily available than the scientific method which is very expensive. It is believed that when this is done, a lot of resources could be saved, which could then be channeled to the other areas of economic development.

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