

The Fight against Guinea Worm in Cases in Mali, Chad, South Sudan, and Ethiopia

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Introduction

Dracunculus medinensis, also known as Guinea worm, is a parasite that is ingested from contaminated water. This contaminated water contains water fleas, which carry the *Dracunculus* larvae within them. Once in the human body, the larvae moves down the intestinal walls, then into the body cavity and grows into an adult worm emerging at the feet. Guinea worm is not a common disease, it is mainly found in tropical areas, especially in low-income countries who lack a clean water supply. There is no available vaccine, however, having a clean water supply will significantly help in eradication.

Guinea worm is a horrible disease that is at a verge of being eradicated. Guinea Worm is mainly found in Africa and some parts of Asia, especially in tropical areas, and low-income regions that have no clean water supply. Guinea Worm is close to eradication. As of 2013 Mali, Chad, South Sudan, and Ethiopia are the only countries with cases of Guinea Worm and only 148 cases reported (Refer to figure 1). This reveals the progress in the eradication process of *dracunculus medinensi*.

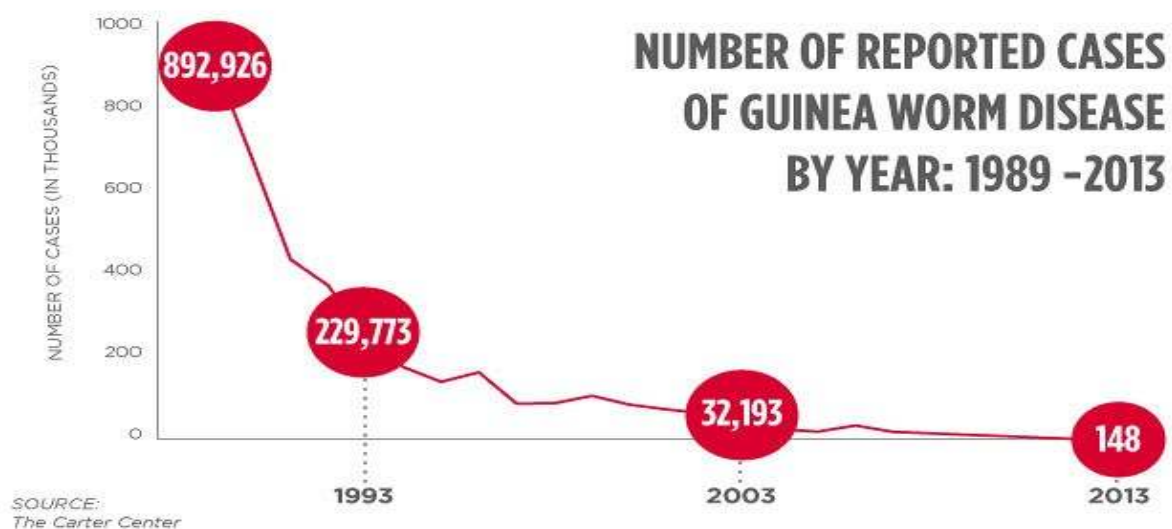


Figure 1: Number of Reported Cases of Guinea Worm Disease from 1989 to 2013.

Health Consequences of Guinea Worm

Dracunculiasis is transmitted through a vector, copepods or water fleas. Humans serve as their reservoir that provide a habitat where they grow and multiply. After ingesting water that contains these water fleas, the larvae leave the stomach, managing its way into the body cavity where it grows. It takes about 10 - 14 months for the larvae to reach its adult form, leaving symptoms usually absent for about one year after infection. After the worm is ingested and has made its way through the body, the adult female worm eventually emerges, usually on the lower limbs. It travels the subcutaneous tissue resulting in a blister and an ulcer. This causes swelling and a severe burning sensation. Common symptoms during emergence include high fevers, nausea and vomiting (Disease, 2012). Emergence can be very slow and can make moving difficult. Bacterial infections often occur at the site of emergence, which can cause further pain or even permanent damage to the body. The only form of diagnosis is by locating the worm on the lesion or microscopic identification of the larvae (Cairncross, Muller, and Zagaria, 2002).

There is no treatment for Guinea Worm Disease It is important to keep the wound as clean as possible and the patient needs to avoid going near drinking water sources to prevent the spreading of the disease. The best way of managing the emergence is by first bathing the body part in water to help the worm come out. Slowly, the worm is pulled out usually taking several days. This is done so that the worm does not break. To prevent the worm from going back inside the body, it is wrapped around a stick or some gauze. Alternatively, a doctor or trained professional can surgically remove it, though this is not typically done (WHO, 2014).

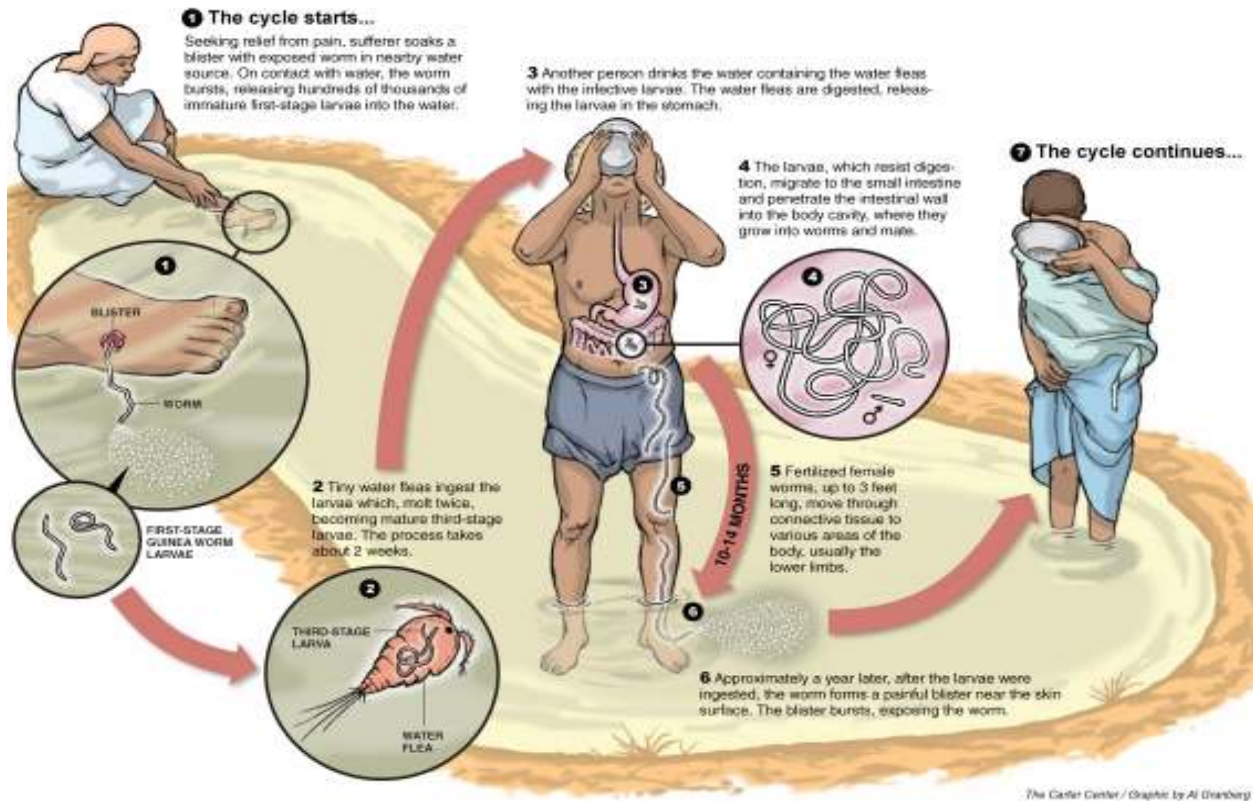


Figure 2: The Life Cycle of Guinea Worm Disease

Risk Factors

Guinea worm occurs mostly in Africa but cases have been reported in India, Asia and Yemen. Guinea worm is more prevalent in the poorest regions of these countries, mainly where there's a lack of clean water. Anyone that drinks from contaminated waters is at a higher risk of contracting the disease. The risk for contracting guinea worm does depend on sex, age, and profession. Guinea worm occurs in about the same amount between men and women, the disease can occur in all age groups but is more common among 15-45 year olds. This is due to the type of profession they are involved in around that age (CDC, 2014). Young adults usually work as farmers, herders, and those who fetch drinking water for their households are more susceptible to contracting the disease. Another very important risk factor for Guinea worm is to have the disease in the past. People in that region who are infected could become infected again. Humans

do not become immune to infection. There are several possible reasons as to why this is happening. First; water sources are still contaminated, also it could be related to a biological factor of the human and increases their chances of contracting the disease (Cairncross, Muller, and Zagaria, 2002).

Social and Other Factors That Affect the Disease

Since Guinea Worm does not have a cure or vaccine, the only way to prevent the spread of disease is by cutting the life cycle of the worm. In order to do so, the community needs to be informed and think of ways to implement certain rules to stop the cycle. The lack of education, trust, clean water, medical facilities and filtering nets just to name a few things make this effort even harder. Woman must fetch water from streams and other contaminated water sources since there is no other way to obtain water. This makes the family and community drink this contaminate water and put every one at risk. When the worm is emerging from the skin it makes a very painful wound, water soothes the pain and the burning. By entering drinking water sources with an emerging worm it allows the worm to lay eggs back into the water and keeps the cycle going (WHO, 2014). Farmers may have an emerging worm but the necessity obligates them to keep working and sometimes enter water sources and they keep infecting the water. Other factors that affect a disease such as this is travelers from other countries that may have Guinea worm may come with out any symptoms and while they stay the worm can start emerging and they can go into drinking water sources and add burden to the community.

Cases in Mali, Chad, South Sudan, and Ethiopia

The situation in these countries is extremely complex as there are areas that are difficult to gain access to. With this difficulty, it prevents proper analysis and containment of all cases. In Mali, there are regions that are unsafe due to a conflict with rebels. Fortunately, there

has been an improvement in the security, which has allowed better access. With this access, there has been an increase of reported cases due to the increased efforts to reach endemic areas. This increase reveals greater effort to eradicate the disease completely (Guinea Worm Eradication Program, 2014). In Chad, there are a total of 11 reported cases of Guinea worm, which is why it is crucial to continue to work to eradicate all the cases around the world.

South Sudan has the largest number of cases, however the overall transmission rates have constantly be decreasing. Antonella Awanja Lomong'o is a Kenyan nurse posted in South Sudan. Lomong'o was shocked with her first encounter of guinea worm, she remembers a women crawling and crying in pain with several worms sticking out of her leg. Lomong'o is now a Guinea worm expert as she is the manager of the entire Guinea Worm Eradication Program in South Sudan (Guinea Worm Eradication Program, 2014). With her guidance and supervision, all patients are isolated receiving three meals a day, fresh beddings, and access to clean water and latrines. She also implemented a cash reward system of 500 Sudanese pounds, in hopes of having people to admit themselves to the center before the worm emerges or to report a possible case in the neighborhood. Lomong'o is on the front lines of the eradication program and plans to stay there until the very end (Guinea Worm Eradication Program, 2014).

In Lamberet, Ethiopia Zerihun Gebrelassie was the first doctor in his village at the age of 24. In 1992, he began his practice where approximately half a million Ethiopians have never visited a physician before. Dr. Zerihum has joined the Carter Center in the fight against neglected diseases. Throughout his experience, he has learned that in order to conquer and eradicate disease, the necessary infrastructure must be built in order to reach each and every household. Dr. Zerihum has helped the Carter Center by building more than a million household latrines and distributed over a million be nets, and delivering preventative drugs, and training

thousands of community health workers. He believes that the quickest way to eradicate Guinea worm is by educated the public, and making them a part of the eradication process (Guinea Worm Eradication Program, 2014).

Conclusion

With all the concern, data, and efforts being made to eradicate Guinea worm, it is obvious that it is an extremely important and urgent matter to eradicate this disease. Guinea worm has affected the lives of millions of people and there are several different factors that make an individual more susceptible to contradicting the disease. Efforts towards the eradication of Guinea worm are on the rise in the remaining endemic countries. The countries of Mali, Chad, South Sudan, and Ethiopia are the only remaining countries with cases of Guinea worm, it is our responsibility to help by raising awareness and donating whenever possible to help eradicate this disease and any other diseases around the world.

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