

A short note on environmental changes and its impact in the human onchocerciasis in Guinea Bissau: retrospective analysis

Keywords: Onchocerciasis, River blindness, *Onchocerca volvulus*, Blackflies; *Simulium*, Guinea Bissau

Introduction

Onchocerciasis also known as river blindness, is a vector borne-disease that has been recorded in 31 countries in Sub-Saharan Africa, Central and South America and The Arabian Peninsula¹ and one of the most emotional parasitic infection because of the high rate morbidity leading as it to :

- (i) Skin thickening and over-growth, sometimes called “lichen-skin”, predisposing to secondary bacterial or fungus infection.
- (ii) Skin, principally over the tibia, may become (particularly in African Patients), thin and de pigmented, a condition known as “leopard skin”.
- (iii) The skin loses its elasticity and becomes wrinkled and atrophied.
- (iv) Fibrous capsules or nodules (adult females are enclosed in them).
- (v) Blindness, which is the more important clinical effect of the parasitism by *O volvulus* (Leuckart 1893), the causal agent of the disease. With the present short note our objective is to present the impact of the environmental changes in the transmission of the human onchocerciasis in Guinea Bissau.

O volvulus is transmitted by *Simulium spp* (black flies), which are blood sucking insects (Diptera: Insecta). The immature stages of black flies breed in fast- flowing well- oxygenated rivers. Adults become infected when taking a blood meal from an infected individual. The larvae (microfilariae) penetrate the gut to reach the flight muscles and there they moult twice. After, they migrate to the head and develop into infective third-stage larvae in about one week, and infect a new host when the black fly takes another blood meal. They enter the wound, migrate to the subcutaneous tissues and develop into adult males and females in around 12 months. Sometimes they live in the deeper tissues. In other cases they are more superficial, becoming enclosed in fibrous capsules or nodules in the subcutaneous tissues (onchocercomas) usually over bony prominences. The adult females, after fertilization, produce large number of larvae, which are the important pathogenic agents for the host. Blindness is the most important clinical effect of parasite and results from lesions in the eyes caused by microfilariae. In Guinea Bissau, the human onchocerciasis was first recorded by Leucoana² in 1956, at Paina Lenguer-Piche, close to the Corubal. After, In 1959, Leucoana³ showed a prevalence rate of 14,8% in 2585 persons examined at villages along the Corubal and Geba rivers. Between 1989 and 1993, we have worked in a project financed by European Commission (contract number TS2-0060) which has studied the onchocerciasis in Guinea Bissau.⁴ The population included in that study was living in villages situated along Corubal river and Geba river, and it had between 15 and 45 or more years old. A total of 1349 individuals were randomly selected being 516 of villages along of Geba river and 833 along Corubal river. Also,

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entomological surveys were carried out along the Corubal and Geba rivers, and black flies have been collected in different breeding places.

The results have showed that highest prevalence rate of onchocerciasis (37.94%) was found in villages along the Corubal river. In villages along the Geba river the individuals with onchocerciasis (19.77%) were 24 or more years old and parasite density were higher in the older age groups (45 or more years old) and generally micro filarial skin densities were relatively low with the majority of infected individuals having less than 15 microfilariae/mg. On the other hand, the results obtained have also demonstrated that the previous focus in the Geba river was inactive because of the paucity of *Simulium damnosum s¹* and that the focus of Corubal river was active. The paucity of this species of black fly was a result of the disappearance of breeding places of this species complex caused by the damming of the Geba river in Senegal. So the transmission of the *O volvulus* became sporadic or even absent. This idea is supported by the observation that onchocerciasis was only found on the older age group (24 or more years old) and by the absence of black flies of the *S damnosum* species complex.

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Conflict of interest

The author has no conflicts of interests in this work.

References

1. WHO. Onchocerciasis. 2018.
2. Leucoana MO. Preliminary note on the existence of onchocerciasis in Portuguese Guinea (first case recorded). *An Inst Med trop.* 1956;13(1/2):83–87.
3. Leucoana MO. First data on the distribution of onchocerciasis in Portuguese Guinea. *An inst Med trop.* 1959;16(1/4):199–208.
4. Grácio AJS, Shelley AJ, Raybould J. Eco-epidemiology of the onchocerciasis in Guinea Bissau (West Africa): A review. *Acta Parasitol Portugesa.* 2010;17(1):23–39.