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Case report

Onchocercoma of the scalp: A case report

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ABSTRACT

Onchocerciasis or river blindness is a parasitic disease caused by *Onchocerca volvulus* transmitted to humans by the byte of a black fly of the species *Simulium*. This pathology, which is a part of the Neglected tropical Disease (NTDs), has been resurgent for some years in certain regions of Burkina Faso. We report a case of onchocercoma with the aim of describing the anatomopathological aspects of this pathology. These were two (02) biopsy fragments from a scalp nodule in an 8-year-old boy, received in the pathology laboratory for examination. In this case study, we recall that onchocerciasis is manifested mainly by skin lesions, subcutaneous nodules and ocular lesions. Histologically, the skin lesions present as a dermatitis with adult worms in the superficial dermis within a predominantly eosinophilic inflammatory infiltrate. Nodules or onchocercomas, usually subcutaneous, consist of fibrous, inflammatory tissue with a predominance of eosinophils and adult worms including females containing microfilariae. Ocular lesions begin with punctate keratitis with a snowflake image. Sclerosis with opacification of the cornea progressively sets in, causing blindness.

Introduction

Onchocerciasis, also called river blindness, is a parasitic disease caused by *Onchocerca volvulus*. It is an endemic disease in certain regions of the world such as Africa, Latin America or Yemen [1,2].

In Burkina Faso, onchocerciasis is one of the Neglected Tropical Diseases (NTDs) which constitute a major public health problem. Various control programs have eliminated the transmission of onchocerciasis [3].

However, in recent years, a resurgence of onchocerciasis cases has been observed in some regions of the country [3].

This disease has ocular, dermatological and systemic manifestations that are sometimes accessible to anatomopathological examination.

We report a case of onchocerciasis in order to recall the anatomopathological aspects of this disease.

Observation

The patient was an 8-year-old boy, living in the Centre-West region of Burkina Faso, with no known pathological history. He consulted the public hospital for a subcutaneous nodule located on the scalp. The haematological assessment showed a slight hypereosinophilia at 1200/mm3. The search for microfilariae was not performed. The patient had never been treated with Ivermectin or DEC before. A biopsy of the nodule was performed. The specimen was sent to the pathology laboratory for examination. Clinical information indicated that it was a scalp nodule.

Macroscopy showed 02 biopsy fragments weighing less than 1 g and measuring 1 cm in long axis each. They were included in their entirety.

Histological examination revealed a dense collagenous fibrous tissue which was the site of a lymphoplasmacytic inflammatory infiltrate with numerous eosinophilic polynuclears. Adult *Onchocerca volvulus* worms were observed in the form of cavities of variable size bordered by eosinophilic membranes with the presence of small rounded structures (uteri) containing microfilariae. This histological aspect was in favor of an onchocercoma.

Figs. 1 and 2 illustrate the histological aspect of an onchocercoma.

Discussion

Onchocerciasis or river blindness is a parasitic disease that affects approximately 17.7 million people in 34 countries in Africa, South America and Central America.

It is estimated that 500,000 people are visually impaired and

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Fig. 1. Collagenous fibrous tissue with adult *Onchocerca volvulus* worms. (Low magnification, hematin-eosin staining).

Fig. 2. Fibrous collagenous tissue with adult female *Onchocerca volvulus* worms with a uterus containing microfilariae. (High magnification, hematin-eosin staining).

270,000 are blind due to this disease. Approximately 99% of onchocerciasis cases are found in sub-Saharan Africa [4, 5, 6].

A neglected tropical disease, onchocerciasis is endemic in some regions of Burkina Faso, notably the Cascades and Southwest regions. However, the Centre West region, where the boy lived, is not an endemic area. This could explain why clinicians did not think of onchocerciasis.

Moreover, the slight hypereosinophilia found is usual in our context because parasitic disease are common in the country.

Onchocerciasis is a chronic dermatitis accompanied by progressive keratitis and uveitis with loss of vision, transmitted to humans by the bite of a black fly or simulium.

The life cycle of *Onchocerca volvulus* consists of 5 stages in which the black fly is the intermediate host and man the definitive host [4].

Clinically, onchocerciasis is manifested mainly by skin lesions, ocular lesions and subcutaneous nodules. In general, clinical manifestations appear after a long incubation period and their severity depends on the intensity of the infection and the host's immune response [6].

Skin lesions are diverse and varied, ranging from mildly pruritic papules to atrophic lesions with lichenification and loss of pigment. The most common skin manifestation is pruritic papular dermatitis [6,7].

The nodules are most often subcutaneous (about 75% of cases). They are not very painful, rounded or oval with a diameter varying between a few millimeters and several centimeters. They may be mobile or fixed. In Africa, 80% of nodules are located in the pelvic region. Other locations are the abdomen, head or limbs [6].

In our case, the nodule was located in the scalp.

The presence of nodules in the scalp is generally associated with a high risk of ocular complications [1].

The ocular lesions are punctate keratitis, corneal opacification or blindness.

Histologically, the nodules consist of dense collagenous fibrous tissue within which adult worms are observed. This tissue is called onchocercoma. The onchocercoma may contain one or more adult worms, both male and female [7]. In initial lesions, granulation tissue with polymorphic inflammatory cells can be observed. In older lesions where the worms have died, only a very dense fibrosis with foci of calcifications and a foreign body gigantocellular granulomatous reaction is observed. Eosinophilic polynuclears are present at all stages of the disease [8].

During dermatitis, the dermis is reworked by a lymphoplasmacytic and eosinophilic inflammatory infiltrate associated with a progressive collagen fibrosis. Microfilariae can be observed between the collagen fibers of the superficial dermis. These microfilariae are more abundant in depigmented areas. The surface epithelium may be the site of acanthosis with hyperkeratosis [1,8].

Ocular lesions are also the result of an inflammatory reaction.

In the anterior segment of the eye, the dead microfilariae become inflammatory foci with the formation of a characteristic punctate keratitis giving a "snowflake" image. Punctate keratitis is a reversible lesion. The evolution will be towards fibrosing keratitis with opacification of the cornea [6].

Choroido-retinitis is the main disorder of the posterior segment. It associates an acute inflammatory reaction and an atrophy of the optic nerve [6].

The diagnosis of onchocerciasis is based on the detection of microfilariae through parasitological examination. Sometimes histological examination may reveal adult worms in the nodules [6].

Onchocerciasis is a disease that is often diagnosed at an advanced stage or at a stage of complications. For our clinical case, the patient presented with a scalp nodule. Early diagnosis was difficult in the absence of histology.

The treatment of onchocerciasis is medicinal, based mainly on the use of Ivermectin. Regular mass campaigns against NTDs are organized in Burkina Faso. During these campaigns, drugs, including Ivermectin, are given to the population under supervision. Sometimes a nodulectomy can be associated with the drug treatment [1,7].

After the histologic diagnosis, the patient was referred to the national program for the control of neglected tropical diseases for appropriate treatment.

Conclusion

Onchocerciasis is a neglected tropical disease that is experiencing a resurgence in Burkina Faso.

The disease can manifest itself as skin lesions, eye lesions or subcutaneous nodules. The nodules are accessible to biopsy or nodulectomy allowing the pathologist to make the diagnosis.

In some circumstances like our clinical case, histology is the only alternative for early diagnosis.

Knowledge of the anatomopathological aspects associated with clinical and epidemiological information can allow an accurate diagnosis and a rapid management of this pathology.

Ethical approval

The authors declare that the approval of the ethics committee is not necessary.

Consent

The authors declare that the consent is not necessary.

Author agreement

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I. Savadogo: conception of the work, interpretation and writing. **F. A.H.A. Ido** and **S. Ouattara:** revisiting the work for critically. **A.S. Ouedraogo:** revisiting the work for critically, final approval.

Author statement

The authors declare that they have read the reviewers' remarks and have taken them into account.

Declaration of Competing Interest

The authors declare that they have no conflict of interest.

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