Onchocerciasis Contracted in Togo: A Propos of One Clinical Case

Corresponding Author:
Mr. Zachary J Wright,
Community Outreach Worker, Marion County Public Health Department, 46208 - United States of America

Submitting Author:
Mr. Zachary J Wright,
Community Outreach Worker, Marion County Public Health Department, 46208 - United States of America

Article ID: WMC002712
Article Type: Case Report
Submitted on: 19-Dec-2011, 02:08:12 AM GMT Published on: 19-Dec-2011, 03:38:26 PM GMT
Article URL: http://www.webmedcentral.com/article_view/2712
Subject Categories: TROPICAL MEDICINE
Keywords: Onchocerciasis, Onchocerca volvulus, Pruritus, Togo

How to cite the article: Meunier Y A, Wright Z J, Hole M K. Onchocerciasis Contracted in Togo: A Propos of One Clinical Case. WebmedCentral TROPICAL MEDICINE 2011;2(12):WMC002712

Copyright: This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Source(s) of Funding:
The reporting of the case did not require any fundraising.

Competing Interests:
The authors report no conflicts of interests.
Onchocerciasis Contracted in Togo: A Propos of One Clinical Case

Author(s): Meunier Y A, Wright Z J, Hole M K

Abstract

We report the case of a 28-year-old French female referred for diffuse pruritus. One month prior to consultation, the patient presented with intense itching in her lower back and bilateral buttocks and thighs. Symptoms were worse at night. Blood differential revealed eosinophilia, and filarial serology was positive. An ophthalmic exam was performed and was negative. Skin snips showed microfilariae of *Onchocerca volvulus*. The patient was admitted and treatment with diethylcarbamazine (DEC) was clinically and biologically successful.

Introduction

Onchocerciasis is a filariasis due to *Onchocerca volvulus*. It is endemic to inter-tropical Africa, where more than 112 million people are at risk for contracting the disease (3.6 million in Togo alone). Onchocerciasis is also found in Latin America (Mexico, Guatemala, Colombia, Venezuela, Brazil, and Ecuador) and Asia (Yemen). The World Health Organization reports that onchocerciasis is endemic to 36 countries worldwide. Estimates report that 37 million people are infected with *O. volvulus*, 800,000 of whom are blind or visually impaired. Onchocerciasis is the fourth leading cause of preventable blindness in the world. Disease transmission is always indirect by black fly (*Simulium* sp.) bites. The parasitic life cycle of the *O. volvulus* infections starts when an infected black fly vector bites a human host, releasing microfilariae (MF) into the bite wound. The larvae mature in the subcutaneous level of the skin, sometimes creating nodules. Adult *O. volvulus* mate in the nodules causing the female to release MF, which cause the symptoms associated with onchocerciasis. Microfilariae spread throughout the skin, peripheral vessels, eyes, and can be found in the blood, urine, and sputum. MF can be ingested by a black fly upon taking a blood meal on an infected human, starting the cycle from the beginning. At-risk populations live near streams or rivers inhabited by the black fly. The symptoms of onchocerciasis are caused by microfilariae (MF), the free larvae offspring released by *O. volvulus* adult females.

Case Report(s)

Mrs. A. M. is a 28-year-old French mother of one child, born prematurely with C-section. She presents with diffuse itching at the Pitié-Salpêtrière Hospital in Paris, France in the late 1980’s. One month prior to consultation, she experienced intense, constant pruritus in her lower back and bilateral buttocks and thighs. The itching is worse at night and has prompted her to take sleeping pills daily. She never experienced pain and presents with a negative review of symptoms. She has had no recent sick contacts, allergies, new foods, medications, or activities. No antihistamines or topical steroids were used to relieve symptoms. Her past medical history is significant for hepatitis B. She had an ovarian cyst removed three years ago and a childhood appendectomy. Throughout her life she has traveled extensively; however, she has been living in Northern Togo for the past two years, without any immediately recent travel. Physical exam reveals crusts with no discharge, scars, and hypopigmented skin secondary to scratching and erythematous maculae. No nodules are found upon superficial bone exam. The rest of the physical exam including Head-Eyes-Ears-Nose-Throat (HEENT), neurological, cardiovascular, pulmonary, Genitourinary (GU), Gastrointestinal (GI), and Musculoskeletal (MSK) exams, were benign. Blood differential reveals eosinophilia (25% of 7,500 WBCs). Erythrocyte Sedimentation Rate (ESR) was within normal limits and a parasitological stool exam was negative. Filarial serology was positive at 1/400 using indirect immunofluorescence and skin snips isolated microfilariae of *Onchocerca volvulus*. An ophthalmic exam was performed and determined negative for the presence of *O. volvulus* MF. The patient is admitted and treated with diethylcarbamazine (DEC), the treatment of choice at the time. The pruritis resolved in a few days. The patient returned for a follow-up exam one year later during her annual vacation and her biological parameters had returned to normal.

Discussion
Our case is typical of the presentation of onchocerciasis in an expatriate. Onchocerciasis is a neglected parasitic disease that can be completely eliminated with adequate intervention. Elaborating on the present case, we would like to point out a few facts about the disease.

The classical clinical triad of onchocerciasis includes pruritus, sub-cutaneous nodules (painless, hard, and fibrous), and a late ophthalmic syndrome with potential to progress to blindness if untreated.7 Pruritus is associated with the inflammatory response to microfilariae death in the sub-cutaneous skin and is sometimes confused with scabies.2, 4, 8 The hypopigmented skin is known as “leopard skin”. Sub-cutaneous nodules are home to worm maturation and mating. An infected person may have hundreds of sub-cutaneous nodules. The nodules are normally painless.8 In the eye, microfilariae cause irritation and inflammation. At first, the inflammation is reversible; however, lack of treatment can lead to irreversible vision changes, and eventually, blindness.2 Blindness results from damaging inflammation to the cornea and optic nerve initially causing clouded vision and loss of peripheral vision.2,4,7,10 A less frequent symptom of onchocerciasis is the non-painful swelling of lymph nodes, commonly called “hanging groin” when inguinal nodes are prominent.

Pruritis is the cardinal sign of the disease, but unlike scabies, it never involves skin folds. The severity of eye lesions depends upon the severity and longevity of infection. Therefore, onchocerciasis is rarely seen in expatriates. Nevertheless, as a rule, an ophthalmologic exam should always be performed when a diagnosis of onchocerciasis has been made. Onchocerciasis and strongyloidiasis are the two tropical diseases inducing eosinophilia.

The most common diagnostic test is skin snip analysis. The method involves a 1-2mg skin biopsy. The biopsy is soaked in saline solution at 20 ºC for 24 hours. If microfilariae are present, they can be viewed microscopically as they emerge from the skin snips. For best results, six skin snips are taken over the illiac crest, scapula, and lower extremities. Skin snips are not overly successful in detecting onchocerciasis in the 1.5 years after infection. PCR can increase test sensitivity within this period of time.2,7,10 In patients presenting with skin nodules, a nodulectomy can be performed. The nodule is surgically removed and analyzed for the presence of adult O. volvulus worms. Microfilariae in the eye are detected by anterior eye slit lamp examination.2,4,8,9 Antibody tests for onchocerciasis also exist; however, such diagnostic tools are uncommon, especially in developing communities. Common serology tests include the OV-16 antigen and the OV luciferase immunoprecipitation system (LIPS) assay.2 Others used encompass indirect immunofluorescence,11 immunoelectrophoresis,12, 13 and ELISA.11, 14

If onchocerciasis is epidemiologically and clinically suspected but skin snips are negative and serology is not available or shows a weak response, a Mazzotti test can be performed as follows: 25 mg of diethylcarbamazine (DEC) is administered orally.6,8,15 Diethylcarbamazine inhibits neuromuscular transmission in nematodes resulting in rapid death of the microfilariae. If the patient experiences intense pruritis within two hours of DEC administration, the indirect diagnosis of onchocerciasis is possible. At the conclusion of the Mazzotti test, a direct diagnosis can be made by re-examining skin snips and checking for microfilariae in the blood and urine. A topical version of the Mazzotti test is also feasible and consists of applying 1% DEC diluted in Nivea cream on a cutaneous area. Patients with onchocerciasis will develop an erythematous reaction on that spot. When treating with DEC, hospital admittance is mandatory because of the potential for extreme Mazzotti reactions like headache, musculoskeletal pain, arthralgias, tender and swollen lymph nodes, tachycardia, hypotension, and vertigo. Possible ocular complications associated with the Mazzotti test are as follows: conjunctival irritation, photophobia, punctate keratitis, acute uveitis, retinal pigment epithelial defects, and optic neuritis.16 Symptoms can be controlled with corticosteroids and anti-histamines.17

Because of the harsh inflammatory side effects of rapidly killing the microfilariae via DEC chemotherapy, ivermectin has become the current drug of choice.17 Ivermectin treats the symptoms of onchocerciasis by gradually killing microfilariae while temporarily sterilizing adult female worms. Ivermectin does not kill the adult nematodes (macrofilariae). Treatment requires a single dose (150 to 200 mg/kg) of ivermectin at least annually for 14 to 16 years (parasite lifespan).2,18,19 The World Health Organization (WHO) does not require trained medical professionals to administer Ivermectin treatment.4 The side effects of ivermectin range from swelling of the eyes, face, arms, hands, feet, ankles, or lower legs to joint pain, lymphadenopathy, and tachycardia.2,5,20

Onchocerciasis and lymphatic filariasis (LF) are co-endemic in some areas of the world.20,21,22 In individuals infected with both onchocerciasis and LF, treatment with ivermectin can be dangerous. Side effects produced by ivermectin’s interactions with microfilariae other than O. volvulus include encephalitis, neurological conditions, coma, and death.21 Recent literature suggests that it may be possible to
treat onchocerciasis in co-endemic regions with antibiotics.\textsuperscript{23} The bacteria endosymbiont (Wolbachia) produced by microfilariae of Onchocerca volvulus plays a key role in producing the symptoms of Onchocerciasis.\textsuperscript{24} Doxycycline has the ability to kill both adult O. volvulus\textsuperscript{25} and symbiont bacteria\textsuperscript{24} without interacting with microfilariae. Programs like the African Program for Onchocerciasis Control\textsuperscript{8} (APOC) work in conjunction with WHO to eradicate onchocerciasis. Successful programs use the novel approach of Community Directed Treatment with Ivermectin (CDTI).\textsuperscript{26,27} The simplicity of a one dose (anually or bi-annually) ivermectin treatment has produced excellent results.\textsuperscript{28} WHO and APOC report that over 68. 4 million people received regular onchocerciasis treatment, via CDTI, by the end of 2009. Nearly 1 million Disability Adjusted Life Years (DALYS) have been averted and the prevalence of the infection has been reduced by 73% since the start of APOC’s involvement.\textsuperscript{8} APOC has attempted to treat other public health concerns in Africa with Community Directed Treatment.\textsuperscript{1,8,29,30} It reports the inclusion of CDTI training in the curriculum of \textsuperscript{8} African universities.\textsuperscript{8} Recent APOC outcomes reveal that elimination of onchocerciasis may be possible.\textsuperscript{1} Some predict that efforts will rid Africa of the disease by 2020.\textsuperscript{1} As of 2009, 73.7% of individuals at risk of onchocerciasis have been treated with CDTI\textsuperscript{1,8}. The focus of APOC is currently shifting from eliminating transmission of the disease to eliminating the disease all together.\textsuperscript{31,32,33} Similar programs have been developed in Latin America with comparable results.\textsuperscript{2,3,34,35,36,37} Along with drug treatments for onchocerciasis, there have been many initiatives to treat the disease by destroying the vector, usually through insecticides. Each initiative was more expensive and less effective than chemotherapy.\textsuperscript{27,28,30,38} Individual prophylaxis is not feasible.

**Conclusion**

After expounding on the presentation of a case of onchocerciasis in an expatriate, we have made a few conclusions about the disease. For decades, onchocerciasis has been a leading cause of preventable blindness and debilatating skin conditions in Africa. Although progress has been made, numerous endemic countries still exist, including Togo. If follow-up on the current programs is carried out as needed, the total eradication of onchocerciasis is possible in the foreseeable future.


35. Sauerbery M. The Onchocerciasis Elimination Program. Annals of Tropical Medicine and
Disclaimer

This article has been downloaded from WebmedCentral. With our unique author driven post publication peer review, contents posted on this web portal do not undergo any prepublication peer or editorial review. It is completely the responsibility of the authors to ensure not only scientific and ethical standards of the manuscript but also its grammatical accuracy. Authors must ensure that they obtain all the necessary permissions before submitting any information that requires obtaining a consent or approval from a third party. Authors should also ensure not to submit any information which they do not have the copyright of or of which they have transferred the copyrights to a third party.

Contents on WebmedCentral are purely for biomedical researchers and scientists. They are not meant to cater to the needs of an individual patient. The web portal or any content(s) therein is neither designed to support, nor replace, the relationship that exists between a patient/site visitor and his/her physician. Your use of the WebmedCentral site and its contents is entirely at your own risk. We do not take any responsibility for any harm that you may suffer or inflict on a third person by following the contents of this website.