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Case Report

Onchocercoma in a United Nations Peacekeeper

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ARTICLE INFO

Article history:

Received 12 October 2012

Accepted 8 May 2013

Available online 20 August 2013

Keywords:

Black fly

Onchocerciasis

Onchocercoma

haemorrhagic spot. After a bite, the stage 3 microfilariae migrate into the subcutaneous tissue, mature into adults and remain in a tangled mass forming the typical nodule known as “Onchocercoma”. We present one such case which was detected incidentally in a United Nations Peacekeeper in the Democratic Republic of Congo (DRC).

Case report

A 38-year-old Ukrainian soldier deployed in the DRC for past six months, presented at this institution with a solitary painless nodule over the right forearm of 1 month duration. There were no associated local or systemic symptoms. General & systemic examination was unremarkable. Local examination revealed 2 × 2 cm subcutaneous nodule over the dorsal aspect of right forearm (Fig. 1). It was non-tender and overlying skin showed mild erythema. Routine haematological and biochemical parameters were within normal range. A clinical diagnosis of lipoma was made and excision performed under local anaesthesia. Histopathological examination revealed a subcutaneous aggregate of adult filarial worms which were morphologically consistent with *O. volvulus* (Figs. 2–4). A diagnosis of Onchocercoma was made and the patient was reassessed. Careful examination of the entire body did not reveal any dermatological manifestations, similar nodules or lymphadenopathy. Slit lamp examination did not reveal any ocular manifestations of the disease. Blood smear for microfilaria and stool examination for ova and larvae were negative

Introduction

Onchocerciasis is a parasitic disease caused by non-sheathed filarial nematode *Onchocerca volvulus*. It is the second leading cause of infectious blindness worldwide and affects more than 17 million individuals annually. The disease is transmitted by the bite of an infected black fly of *Simulium* species. Although this vector is found world over (called Dim-Dam fly in India), the disease remains endemic in Tropical Africa, Central America and Yemen. The vector, found near fast flowing rivers, typically bites during the day being attracted towards humans by their odour and carbon dioxide emission.¹ The bites are classically painful and show a small

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<http://dx.doi.org/10.1016/j.mjafi.2013.05.005>

Fig. 1 – Solitary nodule on right forearm. Photograph depicting a subcutaneous nodule on the dorsal aspect of right forearm. Mild erythema of the overlying skin is also seen.

on three occasions. Patient was administered single dose of Tab Ivermectin 150 µg/kg. No fresh nodules were detected on follow-up after two weeks. Repeat slit lamp examination and routine haematological parameters were also within normal limits. As the patient was de-inducting, he was given Cap Doxycycline 200 mg daily for 4 weeks and advised follow-up at his nearest medical facility along with repeat single dose of Tab Ivermectin after 6 months.

Fig. 2 – Onchocerca (H&E × 50). Photomicrograph of paraffin embedded tissue section showing a typical Onchocerca nodule with coiled adult worms surrounded by inflammatory cells and rim of fibrosis.

Fig. 3 – Onchocerca (H&E × 100). Photomicrograph demonstrating cross section of adult worms with the classical 'double uterus' containing numerous microfilariae. The surrounding tissue shows a mixed inflammatory cell infiltrate in a proteinaceous background.

Discussion

Onchocerciasis is a major health problem in Tropical Africa and Central America. As multiple bites are needed for

Fig. 4 – Onchocerca (H&E × 400). Photomicrograph at higher magnification demonstrating cross section of a gravid female worm containing numerous microfilariae. Surrounding tissue shows an inflammatory cell infiltrate chiefly composed of eosinophils in a proteinaceous background.

transmission, people who travel for short periods of time (less than 3 months) have a lower risk of infection.² United Nations Peacekeepers, missionaries and field researchers who stay in endemic areas for longer duration have a higher risk. The interval between infection and development of symptoms has been reported between 8 and 20 months with few patients remaining asymptomatic,³ our patient developed symptoms within 5 months of induction.

Unlike lymphatic filariasis, in onchocerciasis only dead microfilariae produce a host of manifestations like marked dermatitis, chronic granulomatous inflammation, conjunctivitis, keratitis, chorioretinitis and blindness.^{4,5} Though, nodule formation and blindness is more common in natives and pruritus & dermatitis in travellers,³ our case presented only with a solitary nodule.

A geographical variation in location of nodules has been reported with torso & hip region being common in Africa, whereas in Central Africa upper part of the body especially the head, face and shoulder are the favoured locations⁶ however, nodule on the forearm, as seen in present case, is uncommon. Classically, the nodules are firm, non-tender, usually <2 cm in diameter and on an average contain one male and one or two female worms coiled in a mass.⁷ Our case had a similar morphology.

A number of diagnostic methods have been employed like *Onchocerca* antibody assays and Polymerase Chain Reaction to detect onchocercal DNA in skin snips, though highly specific, these are available only in specialized laboratories Eosinophilia and elevated serum IgE levels are common but not diagnostic in themselves. Provocative tests like Mazzotti test are obsolete due to high risk of anaphylaxis. Definitive diagnosis remains demonstration of microfilariae in "skin-snips" or demonstration of an adult worm in excised nodule as was seen in our case.

The goal of treatment is to prevent development of irreversible lesions and to alleviate symptoms. The recommended management is nodulectomy (where feasible) in order to reduce the work load and chemotherapy to kill the microfilaria and adults. The drug Ivermectin acts on parasite neurotransmitters by potentiation or direct opening of glutamate-gated chloride channels, which paralyzes the microfilariae.⁸ Thus, single oral dose of Ivermectin 150 µg/kg, every 6–12 months is the drug of choice for treating onchocerciasis. Since Ivermectin is only a microfilaricidal agent, treatment is suppressive rather than curative. In order to achieve long term amicrofilaridemia, a 6-week course of Doxycycline (200 mg per day) is advocated. It acts by killing *Wolbachia*, an endosymbiotic rickettsia-like bacteria required by *O. volvulus* microfilariae for survival and embryogenesis.⁵ Our patient was accordingly managed and did not show any recurrence.

No drug for prophylaxis has been found effective in *O. volvulus* infection.⁵ Though, numerous vaccines have been tried, no effective vaccine is available so far.⁷ Thus, the most important preventive measure is personal protection. In order

to prevent bites, measures like rolling down shirt sleeves, socks pulled over the bottom of trousers and treating the clothing/exposed body parts with repellents such as Dibutyl phthalate (DBP). Clearing of vegetation around the camping site along with fogging/spraying of compounds like Permethrin have been found useful in reducing the fly population.⁹

Conclusion

Onchocerciasis is quite common in Tropical Africa. As our Armed Forces personnel are being routinely deployed for Peacekeeping missions, they are at a high risk of contracting this disease. In order to reduce the morbidity as well as prevent the debilitating complications, troops as well as our healthcare workers need to be made aware of this condition, its treatment protocols and preventive measures.

Conflicts of interest

All authors have none to declare.

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