Zeitschrift: Acta Tropica
Herausgeber: Schweizerisches Tropeninstitut (Basel)
Band: 34 (1977)
Heft: 3

Artikel: Microfilarial polyarthritis in a massive Loa loa infestation : a case report
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DOI: https://doi.org/10.5169/seals-312267

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Acta Tropica *34*, 281–284 (1977)

Microfilarial polyarthritis in a massive Loa loa infestation

A case report

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Summary

A Cameroonian affected with massive Loa loa infection developed febrile arthritis with involvement of both knees and the left ankle. Although the patient was first seen by us after one month of treatment with Indomethacin, at this time the joints were still inflamed and microfilariae of Loa loa were found in the synovial fluid. No other etiological mechanism was identified. Following the articular puncture and treatment with Ketoprofen, the arthritis subsisted within a week. This is the first case to be studied in which arthritis during loasis has been explicitly documented by the presence of intra-articular microfilariae.

The filarial arthritides are not uncommon. They are mainly caused by Guinea worm and *Wuchereria bancrofti,* while arthritis due to *Onchocerca volvulus* appears to be less frequent. As for the Loa loa, this parasite is not normally thought to produce arthritis although acute periarticular inflammation often occurs in Calabar edema. Kerckhove [11], and Michotte and Schevrel [12] gave a brief description of loasis rheumatism although they did not explain the mechanism involved. In the present case, polyarthritis was found to be related to the presence of intra-articular microfilariae.

Case report

Mr. D., a 28-year-old Cameroonian student, was first examined by us in January 1975, for pain in his knees and the left ankle.

His past history included symptoms of parasitic infections: at age 22 he had been hospitalized for Anguillula and Necator infections, since 1970 he complained of intermittent pruritis, and in 1974 he mentioned the migration of a worm under the conjunctiva of his right eye.

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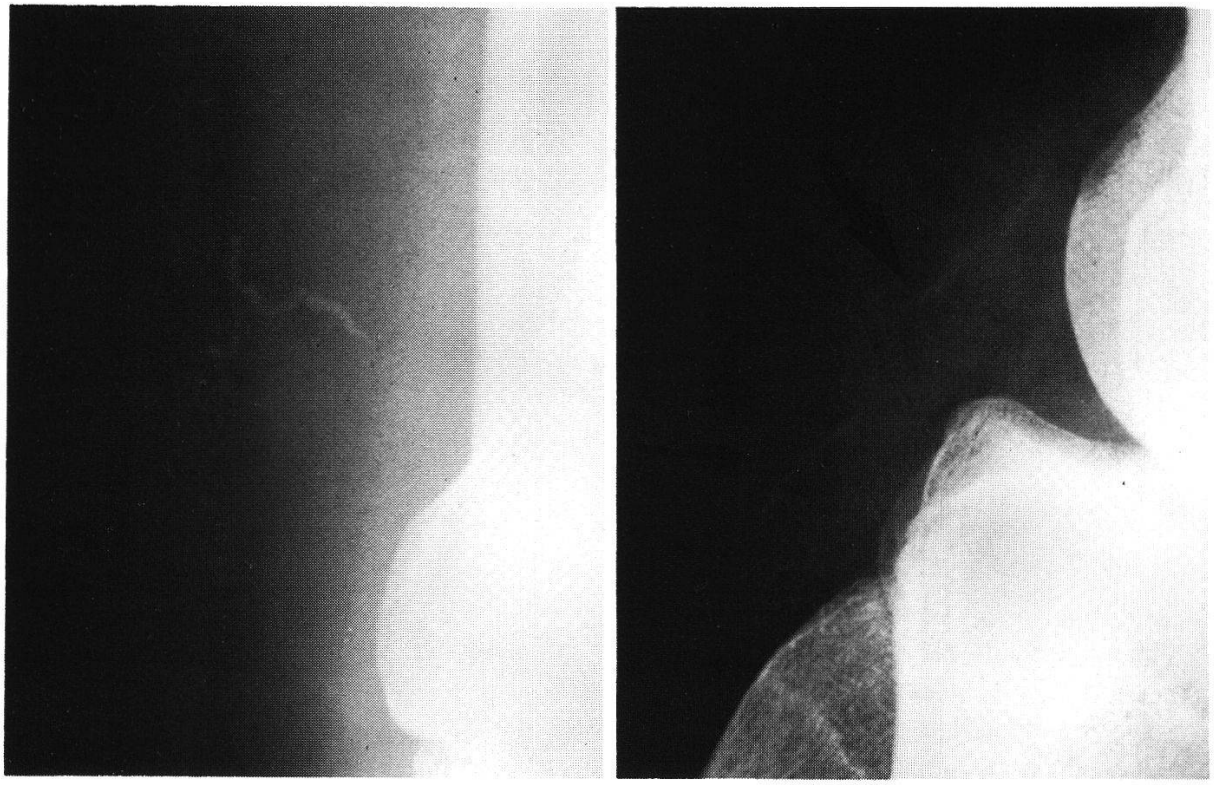

Fig. 1. – a) Invasion of peripheral blood by larvae (× 70). – b) Microfilaria in synovial fluid (× 270).

The left knee pain first occurred on December 15, 1974. The joint was then inflamed and the body temperature was 39° Ch December 18, his right knee and left ankle also became involved. At this time, the patient was treated with Indomethacin at 100 mg daily. The fever disappeared within one week, and the joint swelling decreased somewhat during the next three weeks.

January 20, when the patient was first seen by us, pain was moderate, weight loss was at 6 kg, but his general condition was good. The left knee was warm and swollen, had a slight limitation of flexion-extension, and contained fluid. The left quadriceps muscle was atrophied, while the left ankle was slightly stiff and warm.

Laboratory data: The ESR was 10 mm (1st hour), whereas it had been 30 mm two weeks before. The blood count was normal, with eosinophils at 4%. The presence of abnormal haemoglobin (Hb S) was noted. There was no rheumatoid factor, nor increase of antistreptolysin O. The histocompatibility antigen HLA B27 was not present. Cyto-bacteriologic examination of the urethra did not show intracellular inclusions, nor gonococcal infection. Blood samples taken at 3 P.M. showed massive Loa loa infection (400 larvae/cm^3) (Fig. 1b). The indirect immunofluorescence assay with filarial antigen was positive in the serum at a dilution of 1/200. The synovial fluid obtained from the left knee was not abundant (1.5 cm^3), yellowish, turbid, viscous and sterile; it contained 2400 cells/mm^3: 48% PMN, 52% lymphocytes, 0% eosinophils. Moreover, microscopical examination showed intra-articular Loa loa microfilariae (Fig. 1).

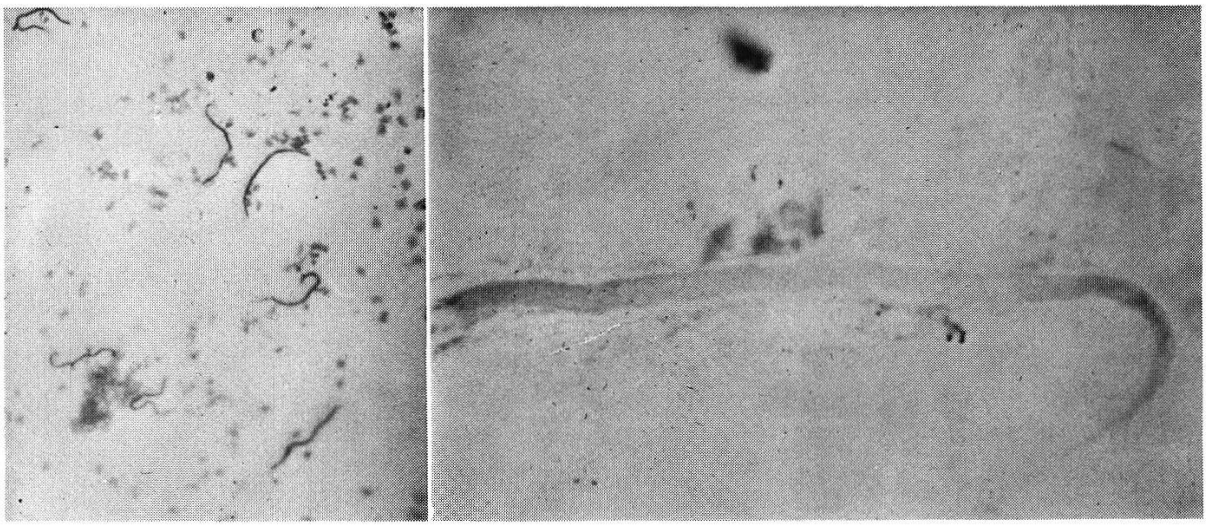

Fig. 2. Filarial calcifications in soft tissues: a) left ankle, b) left knee.

X-rays showed many worm calcifications which ressembled adult Loa loa, spread throughout the soft tissues, mainly around the joints (Fig. 2).

As the patient refused an immediate hospitalisation it was impossible to begin antifilarial treatment, and he was treated with an anti-inflammatory drug, Ketoprofen at 200 mg daily. January 28, one week after the articular puncture had been performed, the pains had completely disappeared, examination was normal and the treatment was discontinued.

In June 1975, the patient was hospitalized for filarial eradication with Diethylcarbamazine. Tolerance was excellent, and the joints remained normal.

Discussion

Arthritis is known to occur with Guinea worm, *Wuchereria bancrofti* and *Onchocerca* filariasis. Arthritis due to Guinea worm is the most frequent and was first described by Béranger-Féraud (1860), and more recently by Huard [8]; it is usually a monoarthritis which affects mainly the knee. The arthritis is due to presence of an adult worm in the joint or in the periarticular region. The worm releases microfilariae into the joint, and consequently induces an inflammatory reaction. A bacterial infection may occur via a skin fistula but usually the synovial fluid is aseptic and contains only worms and larvae [7, 10, 14, 15, 16]. The treatment requires filarial removal by surgery or by arthroscopy [6].

Wuchereria bancrofti induces a polyarthritis which may simulate rheumatic fever [2, 9, 13]. It is common in endemic countries and is also observed in foreign patients in Europe where Coste et al. [3] called it "filarial rheumatism". The mechanism of these attacks seems to be associated with an inflammatory block in the lymph ducts. Neither worms nor larvae are found in the joints. The synovial fluid is chylous [4].

First reported by Advier-Déjou [1], arthritis due to *Onchocerca* is unusual. Involvement is monoarticular. There is acute onset with fever and local inflammation. The fever quickly disappears but local symptoms remain for several weeks. The latter also disappear following removal of synovial fluid [5]. Microfilariae are found in the synovial fluid.

There are two reports on Loa loa arthritis [11, 12], in which, among 4 patients, only in two was a true relation between arthritis and filariasis probable. But in no case was it proven by articular puncture.

In the present case it was established that the synovial fluid contained microfilariae, and that therefore the arthritis was due to the massive Loa loa infection. The joint cellular reaction did not contain eosinophils and was not of allergic type; it contained PMN and lymphocytes and seemed to be of "granulomatous" type. As observed in cases of arthritis due to *O. volvulus,* it is possible that the removal of the synovial fluid might have shortened the evolution of this arthritis. The simultaneous involvement of three joints might be due to massive infection by adult worms which release larvae in the blood and sometimes in joints. To conclude, in the present case, one month after arthritic onset, X-rays showed many worms around the joints, the blood contained a very high number of microfilariae, and most significantly, the synovial fluid was found to contain several microfilariae.

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