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Successfully Treated Loa Meningitis in a Patient Domiciled in Central African Republic

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1. Letter to Editor

A 27-year-old man domiciled in Central African Republic, presented with 8 days history of persistent, band-like headaches. The patient denied history of itching, swelling of the body, eye pain or history of antifilarial drugs within the days preceding his hospitalization. The essential findings on clinical examination were fever (temperature 38˚C) and neck stiffness. The neurological and fundus examination were essentially normal, and in our patient, skin involvement, ocular lesions, Calabar edema and pruritus were not found. The blood tests showed anemia (hemoglobin 7.6 g/dL), a white blood cell count of 9,300 cells/mm^3, and eosinophilia (15.4%, 1,400/mm^3, leading us to suspect a parasitic infection. The thick and thin blood film was negative for malaria parasite and the liver function tests performed the same day were normal. The parasitology examination of a peripheral blood sample revealed the presence of Loa loa microfilariae with a parasitemia of 100 parasites per microliter Figure 1. Screening tests for Human Immunodeficiency Virus (HIV) infection, hepatitis B and C viruses, and syphilis respectively were negative and radiologic investigations (brain MRI) were normal. A lumbar puncture performed, revealed a clear and Colourless Cerebrospinal Fluid (CSF) with normal CSF pressure (normal value<180mmH_2O), 11 white blood cells per mm^3 (normal value 0-5 RBC/mm^3) and 3 red blood cells per mm^3 (normal value 0-5 WBC/mm^3). The CSF protein and sugar were normal. Direct bacteriological examination of the CSF was negative, and numerous live microfilariae were seen on CSF microscopy with estimated count of 20 microfilariaes/50 microliter. Giemsa and Haematoxylin stain demonstrated sheathed microfilariae with nuclei extending to the tip of the larva worm. The CSF and blood cultures for bacterial or fungal infections were persistently negative and china ink stain to detect Cryptococcus neoformans capsules was also negative. Due to his low parasitemia (low Loa loa filaria count of 100 parasites per microliter), our patient received a single oral dose of 9 mg of ivermectin (1.5 tablets of 6 mg). The patient's neurologic condition improved, with resolution of headaches and eosinophilia. A follow-up lumbar puncture revealed a white blood cell count of 1/mm^3 and the repeated blood film and CSF fluid analysis 2 weeks later showed the absence of Loa loa microfilariae in both body fluids.

Neurological complications associated with Loa loa infection are usually the consequence of treatment with Diethylcarbamazine (DEC) or ivermectin (Mectizan), although it may be rarely caused spontaneously by adult worm or of microfilaria (mf) [1,2]. Thus, Loa Loa microfilariae can cause the blood-brain barrier (BBB) disruption and penetrate into the CNS, CSF and meningeal space where they may induce an immunological reaction [3,4]. Therefore, the immune response could play a crucial role through proinflammatory cytokines and vasoactive amines release, complement activation and influx of inflammatory cells causing vessel destruction causing meningitis and/or encephalitis [4,5]. Addionally, the chronic circulation of mf may also lead to cerebral microcirculation obstruction or hemorrhages., etc. could accelerate this process [2,6]. The neurological manifestations of these lesions include asthenia, somnolence, headaches, motor and/or sensory deficits, troubles of sensation, nerve palsies, cerebellar/vestibular syndrome, cognitive impairment, altered consciousness and psychiatric disorders [2,5]. However, these neurological complications may depend upon many other factors such as the quantity of accumulating adult worm antigen, duration and level of exposure, number of secondary bacterial and fungal infections, the degree of host immune response and other cofactors (drugs, coinfection, comorbidities) [1,4]. Furthermore, the administration of microfilaricidal treatment, imply significant risk of neurological serious life-threatening adverse event (SAEs) which is significantly higher when the Loa loa microfilaremia exceed 8000 microfilariae per mL of blood, and is very high for loads of more than 30000 microfilariae per mL [1,4,5]. It is probable that the drug provokes the passage of L. loa microfilariae into the CSF and brain tissue with a massive micro-

filarial death, and that the latter, floating passively in the blood circulation, may finally provoke embolisms in the capillaries and inflammation, especially in the brain (encephalopathies) [5,6].

To our knowledge, the only cases of meningoencephalitis unrelated to antifilarial drug in patients infected with Loa loa are those reported by [5,6]. Additionally, in these 2 cases the disease course was unfavourable with fatal outcome. Thus, we have described the case of meningtis associated with Loa Loa infection in patient with low parasitemia, who was successfully treated with a single oral dose of 9 mg of ivermectin.

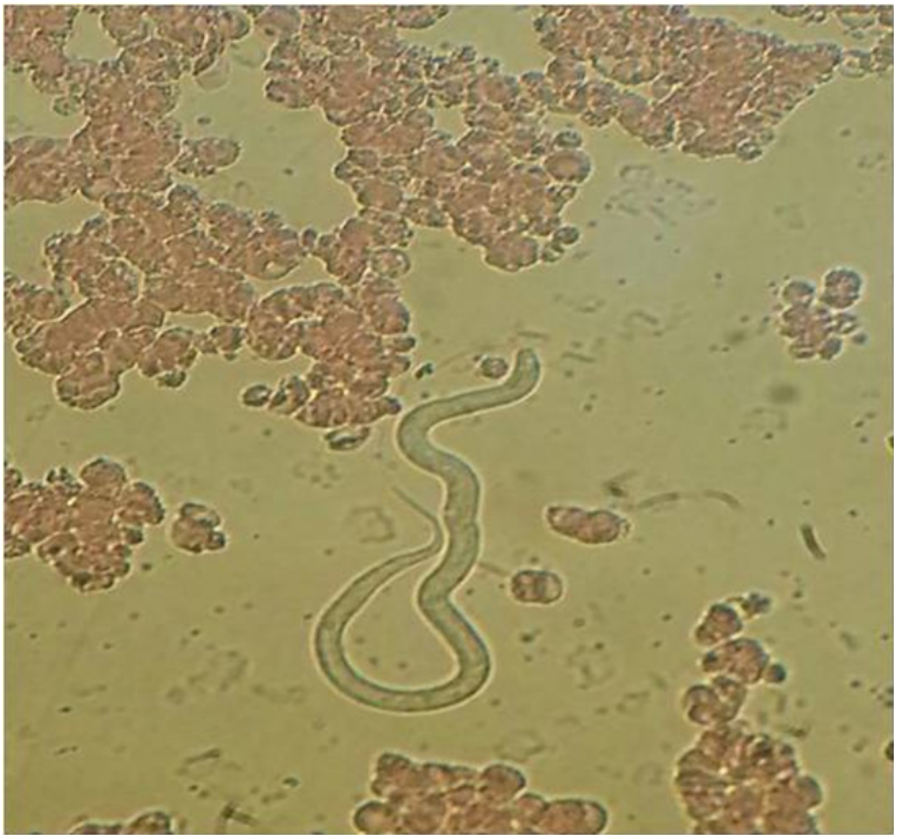

Figure 1 : The parasitology examination of a peripheral blood sample revealed the presence of Loa loa with a parasitemia of 100 parasites per microliter.

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