Human Immunodeficiency Virus and Wuchereria Bancrofti Co-infection in Southern Nigeria: A Case Report

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ABSTRACT
A 66-year-old male patient presented with irrational talks of 6 weeks duration and bilateral leg swelling of 2 years duration. The patient was a known hypertensive and diabetic. His Serum filarial test was very significant, and his brain Computerized Tomography scan showed cerebral atrophy. An assessment of stage 4 HIV (AIDS) was made in the background of filariasis. His Packed Cell Volume, White Blood Cell count, and Liver Function Tests were all within normal limits. Diethylcarbamazine was added to the patient HAART medication. Limb hygiene, elevation, and compressive bandage were also commenced for the swollen limbs. Two weeks into admission, a remarkable improvement was noticed. His memory was greatly improved. The irrational talk was no more, as he engaged incoherent discussions. The swelling of the limbs was greatly subsided. The patient was later discharged home after three weeks on admission to continue his treatment on an out-patient basis.

Keywords: Co-infection, Human Immunodeficiency Virus Infection, Filarial infection, Treatment, Outcome

1. INTRODUCTION
The concurrent infection of a cell or organism with two organisms is called coinfection. It has been observed that simultaneous infections occurring with HIV infection can affect the HIV disease adversely\(^1\). Examples of these infections include tuberculosis, viral infections such as cytomegalovirus, and parasitic infections such as toxoplasmosis\(^2\). Lymphatic filariasis is caused by a thin thread-like parasite that lives in the lymph vessels, causing a significant disability in infected people. The course of HIV depends on several factors such as the host, viral strain, type of treatment and environmental situations are part of the factors that determine the disease progression in an HIV-infected host\(^3\). Treatments of concomitant infections in HIV-infected persons have been adopted in slowing down the progress of HIV disease and to prolong life expectancy\(^4,5\). People positive for the Wuchereria Bancrofti circulating antigen have been reported to be more likely to be HIV-positive than persons without filarial infections\(^6\). There are few reports in the burden of parasitic co-infections in HIV positive individuals; however, it is more likely to be higher in HIV-positive individuals compared to the general population\(^7\). The World Health Organisation (WHO) reported that the burden of parasitic infections tends to be higher in countries with high HIV incidence and prevalence, with 129 million persons reported to be infected with either W. Bancrofti, Brula malayi or B. timori\(^7,8\). Parasitic infections have been reported to be endemic in India, with a prevalence of hookworm infection reported to be between 30% and 62%. The prevalence of lymphatic filariasis, caused by W. bancrofti in southern India, is estimated to be 6%–20% based on the presence of circulating filarial antigen in the serum of infected individuals\(^9\). This case report highlighted a case of an adult Nigerian male identified with HIV infection in the presence of a co-existing Wuchereria bancrofti filarial infection. This case report is aimed to report an identified case of Wuchereria Bancrofti infection in
an adult Nigerian male with HIV infection and at knowing if lymphatic filariasis and its treatment thereof changed the course of HIV infection in people with both diseases.

2. CASE REPORT

The patient is a 66-year-old retired naval officer who presented with a complaint of irrational talk of 6 weeks duration and bilateral leg swelling of two (2) years duration. The leg swelling started gradually on one side initially without much complaint, and he could still go about his normal routine work, but as the leg swelling worsened, it affected both lower limbs and later became associated with pains. The swellings of the lower limbs had worsened in the last six months preceding his presentation. There was no associated fast breathing, no history of dyspnea, no history of easy fatigability, and no history of chest pain. There was no history of reduction in urine volume and no loin pain. There was no history of change in his nutritional status and no history of swelling of the abdomen.

The patient, however, reported a history of a headache, dizziness and memory loss. The Patient is a known hypertensive but not on any antihypertensives and also was diagnosed as diabetic but also was not on any antidiabetic medications. There was no history of violent behavior at the time of presentation. The patient was also noticed to have associated loss of bladder and bowel sphincter control. He had been diagnosed with Human Immunodeficiency virus (HIV) infection about eight years earlier and has been on highly active antiretroviral therapy (HAART) on and off for the past two years.

His physical examination revealed an elderly man that was stuporous, not febrile, not pale, anicteric, and had bilateral non-pitting pedal edema up to the thigh. The skin has umbilicated papules and nodules of molluscum contagiosum. Stemmer’s sign was positive. The edema was Stage 2 (spontaneously reversible) and grade 3b (massive edema involving both limbs) as classified by WHO. Other clinical findings revealed the patient’s heart rate was 89 beats per minute and blood pressure was 160/110mmHg, the respiratory rate was 20 cycles per minutes, and his temperature was 36.90C. The Packed cell volume (PCV) was 33%, and the total white blood cell count (WBC) was 7.8 X109/l. The liver function test, blood urea, creatinine, and electrolytes were all within normal limits. His urinalysis showed no abnormalities. The Electro Cardiography (ECG) done was within normal limits. The serum filarial test done was very significant, and brain Computerised Tomography scan (CT) showed diffuse cerebral atrophy but no features of stroke or any intracranial space occupying lesion. An assessment of stage 4 HIV (AIDS) was made in the background of filariasis. Diethylcarbamazine (DEC) was added to the patient’s HAART medication with the starting dose of 50mg per day and later titrated to 150mg three times daily from the 4th day of introducing the treatment. He also received Haematinics and vitamins. Limb hygiene, elevation, and compressive bandaging were also commenced for the swollen limbs.

Two weeks into the patient’s admission to the hospital, a remarkable improvement was noticed. His memory was greatly improved. The irrational talk was no more as the patient now engages caregiver in a meaningful and coherent discussion. The swelling of the limbs was greatly subsided. The patient was later discharged home after three weeks on admission to continue his treatment on an out-patient basis.

3. DISCUSSION

The course of HIV infection depends on various factors including the host, viral strain, treatment received and other environmental factors(1,2). Treatment of concomitant infections is of primary importance in the delaying of disease progression in HIV-infected individuals. HIV have been reported to be accompanied with a constellation of various opportunistic infections in the course of the disease(3,6,7). A study by Nielsen et al. reported an overall HIV prevalence of 7.9% and a 43.5% prevalence of W. bancrofti specific circulating filarial antigen (CFA) among 907 adults in the Tanga region of Tanzania(6). Significant correlations of HIV and W. bancrofti infection have been reported with a 4.9% prevalence of W. bancrofti CFA among HIV-infected persons(7). While HIV has been reported to most likely influence the burden of filarial infection(8), however, Wolday et al. observed no difference was observed in the level of W. bancrofti CFA between HIV positive and HIV negative as reported in a previous study(11). An overall prevalence of 5% -- 9.5% has been reported by Gopinath et al., among HIV-infected persons in India. In differing with the reports by Wolday and colleagues, Gopinath et al. observed a significant difference in W. bancrofti infection between HIV positive and HIV negative individuals(5).

Infections acquired during HIV infection or previously existing before HIV infection have been shown to alter...
the disease course with earlier progression towards AIDS. However, treatment and or prevention of such infections as filarial infection improve the quality of life and prolong the life expectancy of the HIV-infected person as shown in this case report. The treatment of the filariasis using an appropriate dose of Diethylcarbamazine caused remarkable improvement in the patient health status. Memory was greatly improved, the irrational talk was no more, and the swollen lymphedematous limbs greatly subsided. Previous studies have shown trends toward increased HIV replication in the peripheral blood mononuclear cell (PBMC) from filarial-infected patients. Furthermore, PBMC from 6 filarial-infected patients before anti-filarial treatment were significantly more susceptible to replication of M-tropic virus than their post-treatment PBMC (P = .03). No intergroup differences were found in the surface expression of HLA-DR, CD25, CCR5, CXCR4, CCR3 on CD4 T cells, or monocytes before infection. PBMC from filarial-infected patients produced less Regulated on Activation; Normal T Cell Expressed and Secreted (RANTES) (P = .02) but more intracellular interleukin-4 than those of control subjects. Thus, PBMC from persons with filarial infections appears to have enhanced susceptibility to HIV-1 infection mediated by an undetermined mechanism. A study by Brown et al. enrolled persons living with HIV irrespective of their filarial infection status and treated those with filariasis with two drugs. The result showed no difference in disease progression between both groups after a one-year follow-up. Due to the relative significant prevalence of HIV (3.17%) in Nigeria and the estimated 22.1% prevalence of filarial infection, it becomes imperative that a well-designed study or survey be undertaken as to determine the prevalence of HIV infection coexisting with Wuchereria bancrofti infection. Such study will also to determine if the presence of such co-infections alters the disease progression and outcome of any or both conditions. Such findings may influence the management of such co-infection, especially in Nigeria.

4. CONCLUSION

In people living with HIV infection, simultaneous infections can adversely affect HIV disease. The treatment and prevention of concomitant infections in HIV-infected persons improve the quality of life, prolongs life expectancy and slows down disease progression to AIDS. This may be the situation with the treatment of Filarial infection coexisting with HIV infection and Nigerian patients. A well-designed study to evaluate the effect of the presence and treatment of such coexisting infections on the outcome of both infections is recommended.

DECLARATIONS

The authors wish to categorically state that this manuscript, including related data, figures, and tables has not been previously published and the manuscript is not under consideration elsewhere. All the information contained in this manuscript are original except otherwise clearly stated and duly acknowledged. Ethics approvals and consent to participate: Study was approved by the Research and Ethical Review Committee of International Trauma and Critical Care Centre. Consent for Publication: Secured. Funding: None. Conflicting interests: None.

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