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Co-infection of *Wuchereria bancrofti* and *Escherichia coli* in Semen: A Case Report of Male Secondary Infertility

Solomon M. Gamde¹, Aminu Garba², Ibanga I. Etim³, Ibrahim Sa'adu⁴, Emmanuel I. Obeagu⁵, Ambi I. Mamman⁶, Babatunde D. Oladapo⁷

Department of Medical Laboratory Science, Bingham University Karu, Nasarawa State, Nigeria ¹, National Health Insurance Authority, Sokoto State Office, Nigeria ², Federal School of Medical Laboratory Sciences and Technology, Jos, Nigeria ³, Department of Medical Laboratory Services, Specialist Hospital Sokoto, Nigeria ⁴, Department of Medical Laboratory Science, Kampala International University, Uganda ⁵, Department of Pharmacology/ Zankli Research Centre ⁶, Department of Anatomy, Bingham University Karu, Nasarawa State, Nigeria ⁷.

Author for Correspondence*: solomonmatthias85@gmail.com/08131943803/ORCID: 0000-0002-7631-8782. <https://dx.doi.org/10.4314/sokjmls.v8i2.18>

Abstract

Wuchereria bancrofti is a neglected vector-borne parasitic worm that constitutes a serious public health problem in tropical countries. The parasite is under-recognized especially in endemic regions Nigeria inclusive. Very often, infected individuals are asymptomatic for a long period, making it very difficult to know. A 35-year-old male presented with secondary infertility with intermittent fever in Northwestern Nigeria. Semen microscopy, culture, and sensitivity was carried out. The semen microscopy showed the presence of *Wuchereria bancrofti* while *Escherichia coli* was isolated in the culture. A combined single doses of 400 mg/kg Albendazole and Ivermectin were used for the worm. *Escherichia coli* was sensitive to Ciprofloxacin 500 mg/kg. The fever resolved with normalization of semen. There is need for a baseline data to assess and evaluate the progress of mass drug administration in Nigeria towards eventual eradication of filariasis. In addition, awareness of the unusual presentation would also assist in the diagnosis and possible treatment of infertility.

Keyword: Neglected Tropical disease, Filariasis, *Wuchereria bancrofti*, *Escherichia coli*, Infertility

Introduction

Filariasis is a neglected tropical disease caused by the worms *Wuchereria bancrofti*, *Brugia malayi*, and *Brugia timori* (Ghasemi, 2020). Globally, about 120 million people are living with the disease, and over 1.34 billion people are at risk of infections (WHO, 2019). Despite

concerted efforts by the World Health Organization to eradicate the disease, Nigeria remains the hot spot of the disease in Africa and is ranked the third most endemic country in the world (Christiana *et al.*, 2021).

One of the major challenges confronting the Nigerian Lymphatic Filariasis Elimination Programme is the lack of information on the true prevalence of the disease (Ibo *et al.*, 2012) The worms are often under-recognized especially in the rural endemic areas with high infectivity rates. Very often, infected individuals are asymptomatic for a long period, making it very difficult to identify the geographical hot spots.

Since the diagnosis of the filarial worm is based on the microscopic identification of the microfilaria in blood smears (Arid *et al.*, 2021), we report for the first time the *Wuchereria bancrofti* and *Escherichia coli* co-infection in semen: *A Case Report of Male Infertility*.

Case presentation

As for the case study, a 36-year-old male patient's clinical samples were sent to the laboratory for semen microscopy, culture, and sensitivity as described (Cheesbrough, 2004). In the macroscopy examination, semen volume was 2 ml and appeared creamy-green. The viscosity and liquefaction were abnormal. The microscopic examination of the sperm cells discovered basic viability of 70% and normal morphology of 40% while abnormal morphology of 60%. On further investigations, sperm concentration was 40 x 10⁶ cells/ml (normal range 15-259 x 10⁶ cells/ml), and total

sperm count was 80×10^6 cells/ml (normal range $39\text{-}928 \times 10^6$ cells/ml). The active forward progressive sperm cells were 60%. There were many pus cells, few epithelial cells, and microfilaria worms seen (Figure 1).



Figure 1 Illustrating the *Wuchereria bancrofti* in semen

Discussion

Although the genital disease is a less frequent manifestation of lymphatic filariasis, it seems to be the complication that produces the greatest incapacitation among men (Aguiar-Santos *et al.*, 2009). Besides, there is scarce information in the literature about the pathogenesis of *Wuchereria bancrofti* which causes genital diseases. In the present study, the semen volume was adequate but appeared creamy-green with abnormal viscosity and liquefaction. On further investigations, there were many pus cells, few epithelial cells, and presence of microfilaria worms [Figure 1]. *Wuchereria bancrofti* is the only filarial worm known to cause genital disease. The infection has important medical, psychological, and socioeconomic repercussions in individuals who present this condition (Aguiar-Santos *et al.*, 2009).

In this study, the cultured semen showed that *Escherichia coli* was isolated. While chronic filariasis cannot be cured, its spread could be controlled through drug combinations, and in some cases, surgical reconstruction is efficient, considering that this chronic disease is

Culture semen showed *Escherichia coli* isolated. The bacteria was very sensitive to ciprofloxacin +++ while streptomycin, ofloxacin, Amoxil, ampiclox, and augumentin were resistant.

irreversible (Noroñes *et al.*, 2010). However, *Escherichia coli* was very sensitive to ciprofloxacin and very resistant to streptomycin, ofloxacin, Amoxil, ampiclox, and augumentin in that manner.

Conclusions

Healthcare practitioners should be aware of the uncommon manifestations of *Wuchereria bancrofti* and *Escherichia coli* co-infection in semen: *A case report of secondary male infertility*. Awareness of the unusual presentation would assist in early diagnosis and possible treatment of infertility.

Conflict of interest statement

The authors declare that they have no conflict of interest.

Patient consent

Informed consent was obtained from the patient for the publication of this case report.

Ethics approval

A signed Ethical approval was obtained (SHS/SUB/133/VOL1) and the manuscript is by

the regulations of the Institution's Ethical Committee. A copy is available for review by the Editor of this journal.

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