



## A RARE CASE OF WUCHERERIA BANCROFTI IN URINE

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**Abstract:** A 30 years old migrant laborer from Odessa presented in the pathology outdoor department on December 2013, for examination of urine & hematological investigations for fever with chills & rigors not responding to treatment. The patient's blood & urine samples were collected by the technician for advised investigations. When we saw the chylous urine sample then it was processed for the detection of microfilaria & it was found a rare case of chylous filariasis. On general examination, there was no hepatosplenomegaly or lymphadenopathy. Local examination including genitalia did not reveal any abnormality there was no sign of lymphangitis or lymphadenopathy at any site. After staining by May-Grunwald-Giemsa & Papanicolaou stains, the smear were reviewed under high power & it revealed the presence of two sheathed microfilaria morphologically resembling *W. bancrofti*.

**Keywords:** Filariasis, *Wuchereria bancrofti*, Lymphangitis, Lymphadenopathy.

### INTRODUCTION

*Wuchereria bancrofti* is the infectious agent in 91% of lymphatic filariasis (LF) cases. LF is also recognized as the second most disabling mosquito-borne disease next to malaria<sup>(1,4,5,6)</sup>. *Wuchereria bancrofti* synonym or cross reference: Bancroftian filariasis, Lymphatic filariasis, elephantiasis, *Wuchereria bancrofti* is a filarial nematode that, as an adult, is a thread-like worm<sup>(1,2,3)</sup>. Filariasis (philariasis) is a parasitic tropical disease that is caused by thread-like nematodes (roundworms) belonging to the super family Filarioidea<sup>(7)</sup> also known as "filariae"<sup>(8)</sup>. These are transmitted from host to host by blood-feeding arthropods, mainly black flies and mosquitoes.

Filariasis is considered endemic in tropical and subtropical regions of Asia, Africa, Central & South America, and Pacific Island nations, with more than 120 million people infected and one billion people at risk for infection<sup>(9)</sup>.

It is caused mainly by three species, *Wuchereria bancrofti*, *Brugia malayi* and *Brugia timori*. In India, *W. bancrofti* is the commonest and *B. timori* is the rarest. Filariasis has been reported in cytological smears from various organs and sites like male genital organs, thyroid, breast, lymph node, liver, soft tissue swellings, bone marrow, cervical smears, body fluids etc<sup>(10-16)</sup>.

### Case report

A 30 years old migrant laborer from Odessa presented in the pathology outdoor department of R. D. Gardi Medical College Ujjain on December 2013, for examination of urine & hematological investigations for fever with chills & rigors not responding to treatment. Fever was associated with, headache, flank

pain, joint pain, backache, malaise & patient complains of passing milky urine for the 1<sup>st</sup> time. The patient has received anti malarial treatment from the outside general practitioner. He was referred from medicine department for the investigations of urine, complete bloods count & smear for malarial parasite. The patient's blood & urine samples were collected by the technician for advised investigations. Patients went home after providing sample. When we saw the chylous urine sample then it was processed for the detection of microfilaria & it was found a rare case of chylous filariasis. The detailed physical examination & relevant history was taken when patient has come to the department for collection of report. On general examination, there was no hepatosplenomegaly or lymphadenopathy. Local examination including genitalia did not reveal any abnormality there was no sign of lymphangitis or lymphadenopathy at any site.

Three tests were performed in the urine sample. First routine microscopic & chemical examination was performed. On routine examination revealed 3 + albumin by dipstick & heat & acetic acid method & on microscopic examination it revealed 50-60 RBCs /hpf, WBCs 8-10 per hpf & few uroepithelial cells. Under high power the smear examination revealed a sheathed parasite with discrete nuclei & tail ends taper evenly, no nuclei was found on the tip of the tail the feature seems to be of *W. Bancrofti*.

Second urine sample was processed with equal amount of diethyl ether to remove chyle & after removal of chyle the urine sample was again centrifuged at 2000g for 2 minutes. & three smears were prepared from the sediment. One smear was for routine examination & second & third smear were

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stained by May-Grunwald – Giemsa & Papanicolaou stains.

On high power examination of the sediment prepared after the removal of chyle revealed approximately same microscopic findings as routine examination. It revealed two microfilaria.

May-Grunwald – Giemsa & Papanicolaou stains: The smear were reviewed under high power & it revealed the presence of two sheathed microfilaria morphologically resembling *W. bancrofti* were seen.

CBC count results shows haemoglobin 10 grams % with 22 %, eosinophils in blood. Malarial parasite was not detected in the smear. The case was sent back to referring doctor & after receiving the prescription patient never turned up for follow-up.

### DISCUSSION

The patient was residing in the eastern belt of India, where *Wuchereria bancrofti* is endemic. More than 90 percent of these infections are due to *W. bancrofti*, and the remainders are mostly due to *B. malayi*. Human filarial infections afflict over 150 million persons worldwide and are major causes of morbidity in many developing countries. In filarial endemic areas, there are three groups of patients recognized<sup>(5)</sup>. The first group considered endemic normal's, are exposed to the nematode but have not been infected<sup>(5)</sup>. The second group have been exposed, infected, and have microfilaria in their peripheral circulatory system, but remain asymptomatic<sup>(5)</sup>. Asymptomatic infections can go undetected for years, and with lymphatic filariasis (LF) it may eventually result in internal damage which is not easily diagnosed<sup>(5)</sup>. The third group are those who are chronically infected and present with lymphoedema (which affects 16 million people), hydrocoele and elephantiasis<sup>(5,6)</sup>. Acute (bacterial) dermato-lymphangio-adenitis (ADLA), another condition that can result from infection, presents with fever, chills, swelling and lymphoedema. ADLA usually occurs when an adult worm dies and the lymph vessels surrounding it are inflamed due to the host's immunological response<sup>(2,5)</sup>. ADLA normally occurs in older children and youth and remains with the infected individual throughout life<sup>(5)</sup>. Chronic ADLA attacks can cause renal disease, haematuria, proteinuria, chyluria, nephritic syndrome and glomerulonephritis<sup>(2,5)</sup>. Patients with LF can also have rheumatic problems, cystitis with urethral obstruction, fibrosing mediastinitis, tropical vaginal hydroceles and bladder pseudotumors<sup>(5)</sup>. Another indication of LF is pulmonary eosinophilia which is characterized by paroxysmal cough and wheezing and, even though the patient harbours adult worms, there are no microfilarias in the blood<sup>(5)</sup>. The most disabling of health problems caused by LF is

elephantiasis, a permanent swelling of a limb (usually lower limbs although it can effect arms, breasts and genitalia) *Streptococci* can infect the affected limb, worsening the condition<sup>(5,6)</sup>. Certain markers predispose patients to chronic filarial disease, including a high dose of the infectious agent, a pre-existing bacterial infection, or a specific host response.

The rupture of abdominal lymphatic varices into the renal pelvis or urinary bladder give rise to chyluria when the lymphatic vessel is draining the intestine. Chylus urine is opaque & milky due to suspended fat globule. Blood is frequently present & the condition is then termed as haematochyluria. Prolonged attack of chyluria lead to a syndrome resembling the nephrotic syndrome. Urine containing chyle will coagulate, the condition may present as retention of urine due to coagula but aching in the back, pelvis & groin from the distended lymph varices is more common mode of presentation. Humans are the only known host<sup>(17)</sup>.

Infection usually involves numerous exposures to this organism. It is not uncommon that an individual receive 2700 to 1,000,000 bites from infected mosquitoes (approximately equivalent to 10 to 20 years of exposure) before becoming infected<sup>(1)</sup>. Humans are the only known reservoir for *Wuchereria bancrofti*<sup>(1)</sup>.

Key factors affecting tests: Sheathed microfilariae may ex-sheath if blood sample is not examined within a couple of days of collection.

The specific laboratory diagnosis of filariasis depends either on the demonstration of circulating microfilaria in the peripheral blood or various stages of the parasite in tissue sections.

To monitor suspected cases of LF, laboratories use Giemsa-stained peripheral blood films, phosphatase detection of microfilaria, Knott concentration procedure and membrane filtration techniques<sup>(1)</sup>.

The Knott concentration method involves fixing a 1-ml sample of anticoagulated blood with 4 volumes of Formalin & after centrifugation, the smear is prepared with the sediment & stained by methylene-blue or Giemsa stain<sup>(18)</sup>.

The Nuclepore (Nuclepore Corp, Pleasanton, Calif.) method uses a polycarbonate filter through which 1 to 2 ml of anti coagulated blood is passed. The filter is then removed from the supporting chamber and placed on a microscope slide for counting of parasites. This method is extremely sensitive and ideally suited to epidemiologic surveys in which quantification of microfilaremia is important<sup>(19)</sup>.

Serological techniques using the indirect fluorescent assay with microfilaria and adult worm antigens can assist in confirming a clinical suspicion of filariasis when the parasite is not demonstrable. The development and use of specific monoclonal antibodies for the detection of circulating antigens in the enzyme-linked immunosorbent assay will probably increase the specificity of the assay. Presently available specific DNA probes for filariasis are probably not as useful for patient diagnosis as they are for epidemiological purposes.

More recently, ELISA, PCR, Lymphoscintigraphy, and ICT tests have been used to detect the organism<sup>(1,20)</sup>. The new technology has enabled epidemiologist to monitor the presence of this agent in the mosquito vector. Vector analysis in combination with patient diagnosis has allowed a more comprehensive picture of *Wuchereria bancrofti* and its relevance to human health.

### CONCLUSION

Detection of microfilaria in urine with chyluria is a rare entity. It may occur in acute stage of the disease without signs & symptoms of lymphadenitis or lymphangitis. In early & late stages of the disease microfilaria are usually not present in blood or body fluids. The early diagnosis is usually based on clinical symptoms of patient residing in endemic area. The microfilaria detection in chyluria requires professional skill & a lot of experience with acumen.

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