DOI: 10.7860/JCDR/2014/6244.3906

Case Report

Pathology Section

Microfilariae of *Wuchereria Bancrofti* in a Patient of Chylous Haematuria: Report of an Unusual Finding in Urine Cytology

MOHD JASEEM HASSAN[1], ZEEBA S JAIRAJPURI[2], SUJATA JETLEY[3], SABINA KHAN[4], SAFIA RANA[5], MUSHARRAF HUSSAIN[6]

ABSTRACT

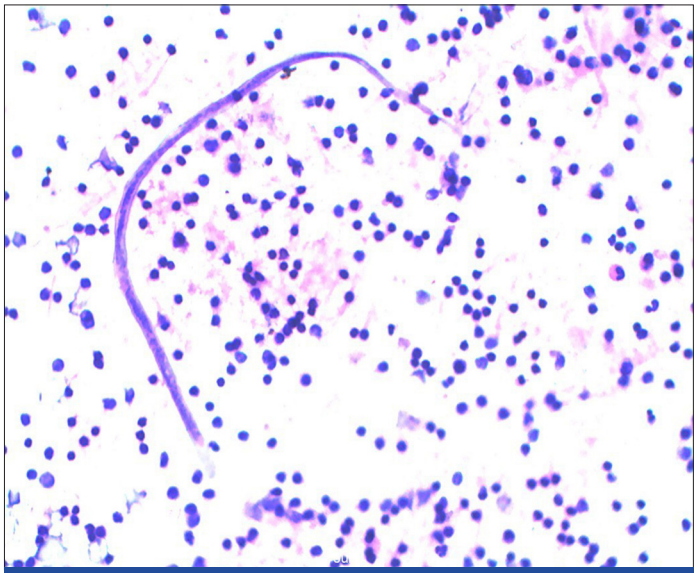
Filariasis is a disabling parasitic disease and it constitutes as a major health problem in most of the tropical and sub-tropical countries. One hundred and twenty million people in at least 80 tropical and sub-tropical countries are infected with lymphatic filarial parasite, with one billion people being at risk of the disease. The laboratory diagnosis of filariasis is conventionally made by demonstrating microfilaria in peripheral blood smear. However, microfilaria have been incidentally detected by doing fine needle aspiration of various lesions in clinically unsuspected cases of filariasis. In 1982, detected microfilariae in the sediment smears of cystoscopically catheterized urine samples, but reports on detection of microfilaria in normally voided urine samples are extremely rare. Here, we are reporting, such a case of microfilariae of Wuchereria bancrofti in an 18–year–old boy who presented with chylous haematuria.

Keywords: Microfilariae, Lymphaticourinary fistula, Chyluria, Haematuria

CASE REPORT

An 18-year-old male patient presented to the Surgery Outpatients Department with a history of milky urine since the past 2 months and intermittent haematuria since 2 weeks. There was no history of trauma, fever, instrumentation or any lymphadenopathy. His physical examination was within normal limit. Local examination, including genitalia, did not reveal any abnormality. Complete blood count showed haemoglobin–13.1gm%, total leukocyte count of 6800cells/cumm. Differential Leukocyte count showed polymorphs-60%, lymphocytes- 28%, monocytes- 2% and eosinophils -11%. Platelet count was within normal limits. Peripheral Blood Smear (PBS) showed a normocytic-normochromic blood picture without evidence of any parasites. Urine sample was sent for examination. Grossly, urine was milky white with a pinkish hue [Table/Fig-1]. A dipstick test done for urine chemistry was strongly positive for urinary protein (four plus), and it was mildly positive for blood (one plus), but it was negative for sugar. For cytological evaluation of urine, Hematoxylin and Eosin and Giemsa stained cytospin smears were examined. Numerous sheathed microfilariae, few degenerated urothelial cells, lymphocytes along with red blood cells were seen in the background [Table/Fig-2]. No atypical cells were seen. Under high power, microfilariae showed a sac like hyaline sheath which was present throughout the length, a cephalic space, central axis of nuclei, with tail tip free from nuclei and pointed terminal end. Subsequent to the cytological diagnosis, midnight blood smear of patient was evaluated, which also demonstrated microfilariae of *W. bancrofti*. Thus, a diagnosis of microfilaraemia with microfilaruria of *W. bancrofti* was made. A course of Diethylcarbamazine (DEC) was given to the patient for three weeks, following which he became asymptomatic. The patient is in follow up.

[Table/Fig-1]: Gross photograph of urine showing milky white urine with a pinkish hue



[Table/Fig-2]: Cytospinsmear of urine showing microfilaria of *W. bancrofti* along with degenerated urothelial cells and lymphocytes in the background (H&E x 400)

DISCUSSION

After malaria, lymphatic filariasis is the second most common vector borne parasitic disease, as well as the second most common cause of long term disability after mental illness [1]. In India, 90% cases of filaria are caused by *W. bancrofti*, the vector for which is Culex quinequefasciatus [2,3]. In the life cycle of W.bancrofti, adult parasites are usually localized to the lymphatic system of the body, while the microfilariae release and circulate in the peripheral blood [4,5].

In 1863, microfilariae of *W. bancrofti* were first discovered by Demarquay in hydrocele fluid. In 1866, Wucherer discovered

micrfilariae in urine [6]. Even though microfilariae have been seen in routine cytological smears of both benign and malignant tumours, its definite role in aetiopathogenesis of malignancy has not been established till now and it could just be an incidental finding [4].

Chyluria is caused by discharge of intestinal lymph (chyle) into the renal pelvis and subsequently into urine. Chyluria indicates the presence of an abnormal communication between intestinal lymphatics and the urinary tract, resulting in formation of lymphaticourinary fistulae. Once such a fistula is formed, milky white urine is passed, which may be continuous or intermittent [3]. In chyluric patients, haematuria is caused by the rupture of minute blood vessels into the urinary tract during the formation of lymphaticourinary fistulae. Our patient presented with chyluria, with intermittent haematuria.

Chyluria may be seen both in parasitic and non-parasitic conditions. Lymphatic filariasis is the most common cause of chyluria in persons living in filarial endemic areas like India, China and South east Asia. Chyluria is a late and uncommon manifestation of chronic lymphatic filariasis and it occurs in nearly 2% cases of filariasis, while achylous haematuria is a very rare presentation of lymphatic filariasis. *W. bancrofti* infection accounts for most of the lymphatic filariasis cases which occur worldwide and it is responsible for more than 90% of cases in India. The adult filarial worm causes lymphangitis, lymphatic hypertension and valvular incompetence. Thus, shedding of microfilariae in urine is probably determined by local factors like lymphatic blockages caused by scars or tumours and damage to vessel wall, caused by inflammation, trauma or stasis [3].

Till date, only few cases of microfilaria have been reported among normally voided urine samples. Weber et al., first reported microfilariae in urine during a routine workup for intermittent painless haematuria [6]. Following this, other authors also reported microfilaria in urine of patients who presented with painless haematuria [2]. A. Seth reported a case of microfilaria in a 25-year-old male who presented with intermittent chyluria, [3] while Verma et al., reported *W. bancrofti* in a 55-year-old lady with chyluria and gross painless haematuria [5]. In our case, except for mild eosinophilia, all other investigations were normal, including initial PBS. However, cytological examination of voided chylous urine samples revealed microfilaria. Contrary to the majority of cases reported by various authors, the subsequent midnight peripheral blood smear revealed microfilaria in our case.

In recent years, several serological and immunological tests have been developed to detect filarial infection [7]. Detection of filarial DNA by polymerase chain reaction is regarded as most sensitive technique for making a definite diagnosis of filarial infection. In filariasis, detection of immune complexes in urine may provide a non-invasive means of assessing the extent of renal damage [8].

Evaluation of chyluria includes localization of the side, site and the level of lymphaticourinary fistulae, and the assessment of the underlying aetiology. Lymphangiography is the most useful radiological investigation, which is indicated mainly to demonstrate the lymphaticourinary fistulae and level of obstruction prior to surgery. Being an invasive technique, lymphangiography is now replaced by non-invasive radiolabelled lymphoscintigraphy for the diagnosis and management of chyluria.

The management of chyluria involves bed rest, diet manipulation, drug therapy and use of abdominal binders. DEC has both micro as well as macrofilaricidal actions. Surgical management of chyluria is indicated in patients with refractory severe chyluria associated with recurrent clot colic, urinary retention, progressive weight loss, ill health caused by immunosuppression and a failed medical therapy. The mainstay of surgical treatment is renal pelvic instillation sclerotherapy, chylolymphatic disconnection and microsurgical lympho-venous anastomosis.

CONCLUSION

The main purpose of this article is to raise the awareness of pathologists and clinicians on the importance of cytological evaluation of urine samples in diagnosis of filariasis, because most of the infected patients do not have microfilaraemia at the time of initial evaluation. Although it is regarded as relatively benign harmless condition, as no deaths caused by chyluria alone have been recorded, all cases of chyluria must be thoroughly investigated to find out the aetiology of chyluria. This case illustrates the role of urinary cytology in definite diagnosis of a clinically unsuspected case of totally curable bancroftian filariasis.

REFERENCES

[1] Wynd S, Melrose WD, Durrheim DN, Carron J, Gyapong M. Understanding the community impact of lymphatic filariasis: a review of sociocultural literature. *Bull World Health Organ*. 2007; 85: 493-98.
[2] Ahuja A, Das P, Durgapal P, Saini A, Dogra PN, Mathur SR, et al. Microfilaria in a patient of achylous hematuria: A rare finding in urine cytology. *J Cytol.* 2012; 29: 147-48.
[3] Seth A. Microfilaruria in a patient of intermittent chyluria. *J Cytol* 2009;26:151-2.
[4] Bipin Kumar, SmritiKarki, Sanjay Kumar Yadava. Role of Fine Needle Aspiration Cytology in diagnosis of filarial infestation. *Diagn. Cytopathol*. 2011; 39: 8-12.
[5] Verma R, Vij M. Microfilaria of Wuchereria bancrofti in urine: An uncommon finding. *Diagn. Cytopathol*. 2011; 39: 847-48.
[6] Weber CA, Eveland LK. Cytological detection of Wuchereria bancrofti microfilaria in urine collected during a routine workup for hematuria. *Acta Cytol.* 1982; 26: 837-39.
[7] Kasper DL, Fauci AS, Longo DL, Braunwald E, Hauser SL, Jameson JL, et al. Harrison's Principles of Internal Medicine. *New York City*, U.S: McGraw-Hill Companies Inc. 2008; 1: 1324-326.
[8] Dixit V, Subhadra AV, Bisen PS, Harinath BC, Prasad GB. Antigen-specific immune complexes in urine of patients with lymphatic filariasis. *J Clin Lab Anal.* 2007; 21: 46-48.

PARTICULARS OF CONTRIBUTORS:
1. Assistant Professor, Department of Pathology, Hamdard Institute of Medical Sciences and Research (HIMSR), Jamia Hamdard–110062, New Delhi, India.
2. Assistant Professor, Department of Pathology, Hamdard Institute of Medical Sciences and Research (HIMSR), Jamia Hamdard–110062, New Delhi, India.
3. Professor, Department of Pathology, Hamdard Institute of Medical Sciences and Research (HIMSR), Jamia Hamdard–110062, New Delhi, India.
4. Assistant Professor, Department of Pathology, Hamdard Institute of Medical Sciences and Research (HIMSR), Jamia Hamdard–110062, New Delhi, India.
5. Demonstrator, Department of Pathology, Hamdard Institute of Medical Sciences and Research (HIMSR), Jamia Hamdard–110062, New Delhi, India.
6. Associate Professor, General Surgery, Hamdard Institute of Medical Sciences and Research (HIMSR), Jamia Hamdard–110062, New Delhi, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:
Dr. Sujata Jetley,
Professor, Department of Pathology,
Hamdard Institute of Medical Sciences and Research (HIMSR), Jamia Hamdard–110062, New Delhi, India.
Phone: +91-9350621681, E-mail: sujatajetley@gmail.com

FINANCIAL OR OTHER COMPETING INTERESTS: None

Date of Submission: **Apr 14, 2013**
Date of Peer Review: **Jul 12, 2013**
Date of Acceptance: **Sep 19, 2013**
Date of Publishing: **Jan 12, 2014**