Urinary filariasis masquerading as the bladder tumor: A case report with cyto-histological correlation

ABSTRACT
Filariasis is a prevalent parasitic infection of lymphatic frequently seen in tropical countries. It has been reported in cytological samples from various sites; however, presence of microfilaria in smears from the urine sample is an uncommon finding. We describe an interesting and unusual case of elderly female who presented with achylous hematuria and an exophytic mass lesion in urinary bladder on computed tomography scan suspected of neoplastic mass lesion; however diagnosed as urinary filariasis on urine cytology and bladder biopsy.

Key words: Filariasis; hematuria; non-neoplastic lesions; parasitic infections; urinary bladder

Introduction
Filariasis is a widespread parasitic infection in the tropical countries with the greatest incidence in Asia. Wuchereria bancrofti, Brugia malayi and Brugia timori are the three most common species that causes the filariasis; in India, W. bancrofti is the most common cause.[1] Microfilariae (Mf) have been described in aspiration cytological smears from various sites and body fluids;[2-4] however its presence in urine smear in a case of hematuria is exceptionally rare.

We report an unusual and interesting case of elderly female who presented with hematuria and an exophytic lesion in urinary bladder on computed tomography (CT) scan suspected of neoplastic mass lesion; however, the final diagnosis was filarial cystitis (FC) on cytology and histopathology.

Case Report
A 55-year-old female patient presented to the surgery department with complaints of intermittent painless gross hematuria for 2 months. There was no history of fever, burning micturition, increased frequency of micturition, dysuria, renal or ureteric colic, jaundice, trauma, instrumentation or passage of milky white urine. The general physical examination did not reveal any abnormality. Initial routine hemogram and peripheral smear (PS) examination was within normal limits. Routine urine examination showed marked proteinuria and; on microscopy, numerous red blood cells (RBCs) along with few pus cells. Urine culture revealed mixed organisms and; was negative for Ziehl–Neelsen stain for acid fast bacilli.

A contrast-enhanced CT scan of the lower abdomen revealed intraluminal filling defect by a well-defined lobulated by an exophytic hypodense lesion measuring 3.5 cm × 4 cm in size in the posterior aspect of right side dome of bladder; thus radiologically suggestive of malignant mass lesion [Figure 1]. Bilateral kidneys and perivesical structures were normal, no free fluid or abdominal lymphadenopathy was seen. Subsequently, cytopsin smears from the urine sample, showed neutrophils, lymphocytes, RBCs, occasional epithelial cells and; interestingly a Mf of W. bancrofti species was also seen which was sheathed, had central axis of nuclei that lagged behind the tip of tail [Figure 2a]. No atypical cells suggestive
of malignancy were seen. Thus the cytological diagnosis of FC was suggested. A repeat night time hemogram showed increased absolute eosinophil count to 1250 cells/mm³ and the PS revealed presence of many Mf [Figure 2b].

A cystoscopy was carried out which revealed presence of mucosal infection, back pressure changes, clots and necrotic tissue in the bladder. A six quadrant biopsy was taken and sent for histopathological examination. Histological examination of biopsy from the right side dome of urinary bladder revealed normal urothelium overlying subepithelial tissue; also seen were Mf of \textit{W. bancrofti} species in subepithelium, and in the vascular and lymphatic channels of subepithelium [Figure 3a-c]; however, there was no inflammation or atypical cells. Rest of the five quadrant biopsies showed mild inflammation comprising of lymphocytes and eosinophils. There was no evidence of malignancy in any of the biopsies; thus the final diagnosis was FC. Subsequently, the patient was started on a 21 days course of diethylcarbazine (DEC) following which she became asymptomatic.

**Discussion**

In India, majority of the filarial infections are caused by \textit{W. bancrofti}; accounting for approximately 95% of cases. Patients with filariasis are usually asymptomatic, but may present with varied clinical manifestations, that is, microfilaremia, lymphedema, hydrocele, acute adenolymphangitis, chronic lymphatic disease and rarely with the chyluria and tropical eosinophilia.\(^1\)\(^-\)\(^3\) Webber and Eveland\(^5\) were the first to report Mf in both voided as well as catheterized urine samples from a young male patient with intermittent painless hematuria. Achylous hematuria along with an exophytic lesion on CT scan is a very unusual presentation of filariasis. To the best of our literature search, only single case report of Mf in chylous hematuria with multiple exophytic lesions in the bladder, which were clinically mistaken for malignancy has been reported.\(^6\) However, the pathogenesis for these exophytic lesions has not been described yet. Vankalakunti \textit{et al.}\(^7\) reported a case of a middle-aged male who presented with painless hematuria with clinical suspicion of malignancy; however, the CT scan and cystoscopic findings were normal.

In the life cycle of \textit{W. bancrofti}, the adult worm is confined to the lymphatics, whereas the Mf circulates in the peripheral blood. During the course of its transport, it may lead to the formation of a lympho-urinary fistula. Hence, the appearance of Mf in urine can either be attributed to obstruction of lymphatics or damage to the vessel wall by local factors, that is, scar, tumor, inflammation, trauma or stasis.\(^3\)\(^-\)\(^8\) Ahuja \textit{et al.}\(^3\)

Figure 1: Computed tomography scan shows intraluminal filling defect by a lobulated exophytic hypodense mass lesion in the posterior aspect of right side dome of bladder

Figure 2: Cytospin smear from urine shows microfilaria and few squamous cells (a) and microfilaria in peripheral blood smear (b). Giemsa Stain ×400

Figure 3: Urinary bladder biopsy shows, microfilaria in sub-epithelial region (arrow) in low power (a) and higher magnification (inset), in lymphatic (b) and; congested vessels with many eosinophils (c) (a: H and E, ×250), (b and c: ×400)
reported a case of Mf in a patient of achylous hematuria and suggested that the achylous urine may be due to the absence of significant lymphatic obstruction. The present case had achylous hematuria and an exophytic lesion in the bladder suggestive of the neoplastic lesion on radiology. A biopsy of these lesions is mandatory to rule out other lesions, that is, *Schistosoma hematobium* infection or urothelial tumors.\(^7\)

Various serological markers have been developed recently for the diagnosis of filarial infection. Patients with filarial infection develop IgG4 antibodies against *W. bancrofti* antigen Wb-SXP-1.\(^1\) Furthermore, the detection of urinary and serum immune complexes are potential markers for its diagnosis as well as therapeutic monitoring for carriers.\(^8\) The treatment of choice for active filarial infection is DEC, which has both macro and microfilaricidal properties.\(^3\)

**Conclusion**

The detection of Mf in achylous hematuria is very rare. Most patients from endemic region also do not demonstrate parasite at initial presentation, thus a repeated cytospin preparation from the hematuric and or chylous urine should be performed at regular intervals for diagnostic confirmation of filariasis at uncommon site with uncommon presentation. Furthermore, careful screening may help in the diagnosis of this curable infection. Filariasis presenting as pseudo tumor in the urinary bladder is rare, and a biopsy is mandatory for the definitive diagnosis.

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