

A Rare Parasitic Infection Diagnosed in a Traveller in India: Urinary Schistosomiasis- A Case Report

BHASKAR DAS¹, NATASHA MITTAL², GURDEEP SINGH³, TANUJ PAUL BHATIA⁴

ABSTRACT

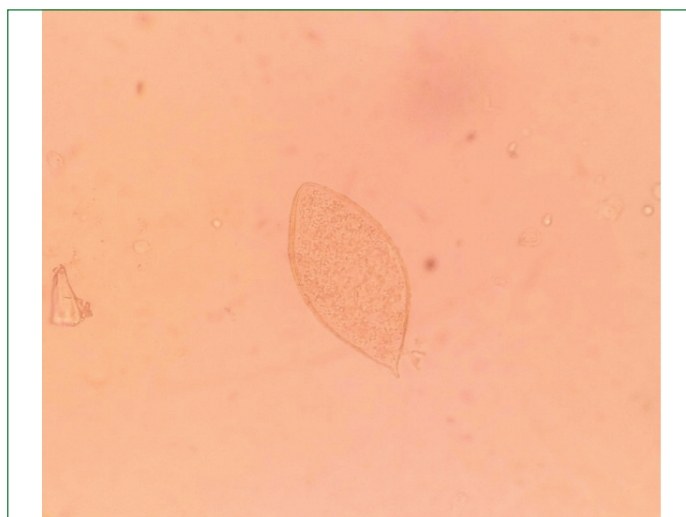
Schistosomiasis is prevalent in tropical countries but it is rare in Indian subcontinent. Basically two major forms of schistosomiasis are there- intestinal and urogenital which are caused by five species of schistosomes. Urinary schistosomiasis is caused by *Schistosoma haematobium* (*S. haematobium*). Though this infection is endemic in Africa and Middle-east, population movement from endemic zones has resulted in detection of such cases in non-endemic developing countries. Detection of egg of *S. haematobium* is the gold standard test for diagnosis of schistosomiasis. Histopathological examination of urinary bladder is an alternative diagnostic method. Here, we report a case of urinary schistosomiasis in a 12-year-old Nigerian traveller who was presented with terminal haematuria. Patient had history of bathing in fresh water ponds and rivers. Ultrasound abdomen and cystoscopy revealed nodular lesions on the wall of urinary bladder. Diagnosis of schistosomiasis is made by detection of egg of *S. haematobium* in urine sample and biopsy of urinary bladder. Patient was treated with oral Praziquantel.

Keywords: Bilharziasis, Terminal haematuria, Urinary bladder

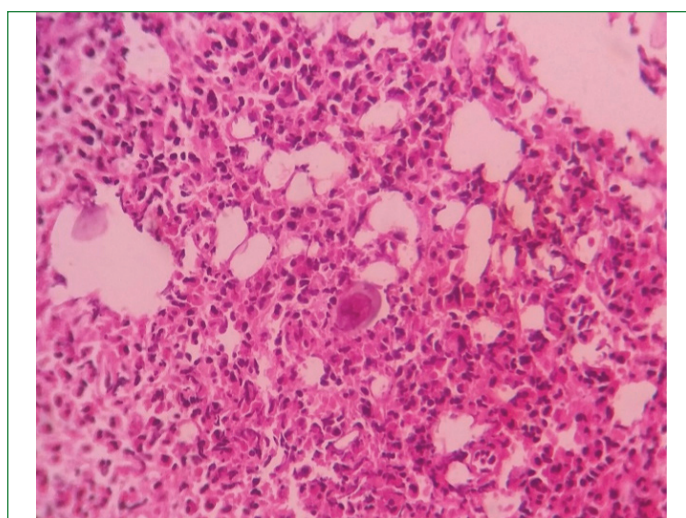
CASE REPORT

A 12-year-old Nigerian boy presented to our hospital with history of intermittent painless terminal haematuria for last six months. The frequency of haematuria was one to two episodes per week and each time haematuria episode was associated with pain in right side of lower abdomen. History of fever or weight loss was negative. Past history revealed patient was suspected to be a case of urinary bladder malignancy in his country, but could not be confirmed with definitive investigations. Physical examination revealed no gross abnormality in any organ system. Blood count and renal function test were normal. USG whole abdomen revealed soft tissue density lesion measuring 2.9×1.5 cm arising from posterior wall of urinary bladder extending upto right vesicoureteric junction along with another small isoechoic nodule measuring 1.9 mm arising from lateral wall of urinary bladder. Cystoscopy was done which revealed nodular lesions in base and dome of bladder and tubercle like lesion in lateral wall of the bladder. Resection biopsy was taken in view of suspicion of malignancy in his home country for pathological examination. Urine routine examination was done which showed 4-6 pus cells/high power field, 2-4 RBCs/high power field, 1-2 epithelial cells/high power field and scanty eggs of *Schistosoma haematobium* (*S. haematobium*) with characteristic 'terminal spine' [Table/Fig-1].

Ziehl Neelsen stain of urine was done to rule out urinary tuberculosis, which was negative. Aerobic bacterial culture of urine was sterile. Further detailed history revealed patient had habit of bathing in fresh water ponds and rivers, which might be the source of infection in this case. The diagnosis of urinary schistosomiasis was confirmed in resection biopsy of urinary bladder which also showed egg of *S. haematobium* along with acute inflammatory infiltrate composed of neutrophils and eosinophils in the mucosa and no feature of malignancy was there [Table/Fig-2]. Stool routine examination did not reveal egg of *S. haematobium*. Patient was treated with oral Praziquantel 25mg/kg body weight in a single day in two divided doses and to repeat three courses at two weeks of interval. Urine sample became negative for egg of *S. haematobium* after three days of first dose of the drug. Patient was asked to review after three months for urine routine examination, but till now the patient has not turned up for review.



[Table/Fig-1]: *Schistosoma haematobium* egg with terminal spine in urine sample (wet mount preparation, high power×40x magnification).



[Table/Fig-2]: *Schistosoma haematobium* egg along with acute inflammatory infiltrate composed of neutrophils and eosinophils in mucosa of urinary bladder (H & E stain, low power×10x magnification).

DISCUSSION

Schistosomiasis also known as Bilharziasis is water borne parasitic disease caused by the Platyhelminth worm of the class Trematoda and genus *Schistosoma* [1]. It is endemic in tropical and sub-tropical countries mainly in Africa and eastern Mediterranean region. It affects 200 million people and poses threat to 600 million people in more than 76 countries. The infection can also be seen in countries where it is not endemic because of the increase in traveling [2]. *Schistosoma haematobium*, one of the *Schistosoma* species infects the urinary tract. Urinary schistosomiasis manifests as haematuria, usually appears at the end of micturition, termed 'terminal haematuria'. The complications include ulceration, granulomatous inflammation and fibrosis [3]. Schistosomiasis is one of the oldest known parasitic infestations; however it was first described by German scientist Theodor Bilharz during autopsy. Adult worms are dioecious, parasitise venous systems and produce non-operculated eggs [4]. Out of so many species of schistosomes, five primary ones infect man. There are two major forms of schistosomiasis- intestinal and urogenital schistosomiasis and five species of schistosomes has been implicated. Urinary schistosomiasis is caused by *S. haematobium* and intestinal schistosomiasis by *S. mansoni*, *S. japonicum* and *S. mekongi*. *S. intercalatum* causes rectal schistosomiasis [1]. The parasite is excreted via urine and faeces into fresh water and the miracidia infects its intermediate host, the fresh water snails, where they develop into cercaria. The cercaria stage is released from snails into water and penetrates human skin, when comes in contact and then enters subcutaneous tissue, then blood stream and migrate to the lungs, then to liver. After six weeks, the mature worms mate and the adult worms migrate into the venous plexuses of the genitourinary system. The viable adult worms deposit eggs in the tissues of intestine, urinary bladder, prostate and other organs that induces granulomatous host response with formation of polypoid lesions. The inflammation may manifest as well circumscribed granulomas or as diffuse cellular infiltrate. In urinary schistosomiasis, the urinary bladder, lower ends of ureters and seminal vesicles are affected and is manifested by haematuria and urinary excretion of eggs [1,2,5,6]. Schistosomes are characterised by the types of egg produced: a) eggs with lateral spine e.g., *S. mansoni*; b) eggs with terminal spine e.g., *S. haematobium* and *S. intercalatum*; c) eggs that are round and minutely spined e.g., *S. japonicum* and *S. mekongi* [1].

Literature search for urinary schistosomiasis has shown a very low rate in South-east Asian and South Asian countries. In India an endemic focus of urinary schistosomiasis was confirmed in Gimvi village of Ratnagiri district, Maharashtra, probably by a new schistosome species. As the eggs were oval shaped and were present in urine of patient, but as no species of *Bulinus* snail, the

intermediate host of *S. haematobium* is existing in India, so a new schistosome species that is *Schistosoma gimvicum* name has been proposed [4,7,8].

Routine examination of urine is the gold standard test for the diagnosis of urinary schistosomiasis by detecting egg of *S. haematobium*. Histopathological examination of urinary bladder specimen for eggs of *S. haematobium* is an alternative diagnostic method [3]. The treatment of urinary schistosomiasis is oral Praziquantel, a pyrazinoisoquinolone derivative, which is a safe and effective drug against all *Schistosoma* species [3,9].

This case report is important as the parasite *S. haematobium* has not been reported in India. But because of globalisation and more frequent travels, there are chances of detection of more cases in India, whether any Indian visits prevalent countries or any foreigner visits India from such countries. So, we as clinicians should upgrade our knowledge regarding such rare diseases and one should keep in mind such diseases as differential diagnosis while treating patients with similar symptoms and history of travel.

CONCLUSION

We have reported a case of urinary schistosomiasis caused by *S. haematobium* with typical characteristics of egg in urine sample along with characteristic histopathological features. Though urinary schistosomiasis is endemic in Africa and Middle-east countries, the disease can be encountered in developing countries like India with increasing population who are frequent traveller. So, to diagnose such a rare disease in this part of world one needs a very strong suspicion of the disease and observation capabilities in patient's samples.

REFERENCES

- [1] Sharma R, Mahore SD, Kohle H, Patil R, Bothale K, Wilkinson A. *Schistosoma* in prostate- A case report. International Journal of Allied Medical Sciences and Clinical Research. 2015;3(Suppl 3):293-97.
- [2] Aytaç B, Şehitoğlu I. A rare parasitic infection in Turkey: Schistosomiasis. Case Report. Turkish Journal of Pathology. 2012;28(Suppl 2):175-77.
- [3] Lin YY, Lin VCH, Chang IW. Urinary schistosomiasis: *Schistosoma haematobium* infection diagnosed by histopathology. Indian Journal of Pathology and Microbiology. 2017;60(Suppl 4):614-15.
- [4] Kali A. Schistosome infections: An Indian Perspective. Journal of Clinical and Diagnostic Research. 2015;9(Suppl 2):DE01-DE04.
- [5] Odegaard JI, Hsieh MH. Immune responses to *Schistosoma haematobium* infection. Parasite Immunology. 2014;36:428-38.
- [6] Tzanetou K, Adamis G, Andipa E, Zorzos C, Ntoumas K, Armenis K, et al Urinary Tract *Schistosoma haematobium* infection: A case report. Journal of Travel Medicine. 2007;14(Suppl 5):334-37.
- [7] Agarwal MC, Rao VG. Indian Schistosomes: A need for further investigations. Journal of Parasitology Research. 2011;2011:250868, 4 pages.
- [8] Wiwanitkit V. Overview of clinical reports on urinary schistosomiasis in the tropical Asia. Pakistan Journal of Medical Sciences. 2005;21(Suppl 4):499-501.
- [9] Gray DJ, Ross AG, Li YS, McManus DP. Diagnosis and management of schistosomiasis. British Medical Journal. 2011;342:d2651.

PARTICULARS OF CONTRIBUTORS:

1. Consultant Microbiologist, Department of Microbiology, Sarvodaya Hospital and Research Centre, Faridabad, Haryana, India.
2. Consultant Pathologist, Department of Pathology, Sarvodaya Hospital and Research Centre, Faridabad, Haryana, India.
3. Consultant Pathologist, Department of Pathology, Sarvodaya Hospital and Research Centre, Faridabad, Haryana, India.
4. Consultant Urologist, Department of Urology, Sarvodaya Hospital and Research Centre, Faridabad, Haryana, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Bhaskar Das,
D1, 807, Summer Palms, Sector-86, Faridabad, Haryana, India.
E-mail: drbhaskarinnet@gmail.com

Date of Submission: **Apr 15, 2019**
Date of Peer Review: **May 07, 2019**
Date of Acceptance: **Jun 26, 2019**
Date of Publishing: **Jul 01, 2019**

FINANCIAL OR OTHER COMPETING INTERESTS: None.