INTRODUCTION

Schistosomiasis is one of the most common infectious diseases in the world with about 200 million infected people. Schistosomiasis is endemic in many countries in Africa, Far East Asia, Central and South America where poor sanitation coupled with lack of potable water enhances schistosomal transmission through the usage of contaminated water for bathing and drinking. Schistosomiasis, a chronic granulomatous disease, caused by the genus schistosoma, has 5 main species causing human diseases. These include *S mansoni*, *S japonicum*, *S haematobium*, *S intercalatum* and *S mekongi*. Of these, *S haematobium* is the only one with predilection to infect the urinary system because it lives in the vesical plexus near the urinary bladder. Other species infect the gastrointestinal system, although, virtually any organ in the body could be infected. We present the report of a 25-year-old male student with a diagnosis of acute pyelonephritis and bilateral ureteric obstruction sequel to schistosomiasis of the urinary tract.

CASE REPORT

This is a case report of a 25-year-old male student, who lived in a rural community in southern Nigeria, where the main source of water for general use was river. He presented with 2-year history of recurrent left-sided flank pain and 4 day's history of non-projectile vomiting, chills and rigors prior to hospital admission. There was no history of haematuria, dysuria, hesitancy or urgency. Previous medical history showed he had 5 years earlier presented with a right-sided epidydymal mass, which was excised. The histopathological diagnosis was schistosomal epidydymitis and he was treated with praziquantel.

Clinical examinations showed an acutely ill-looking, febrile young man with positive left renal angle tenderness. Other systems' examinations were essentially normal. An initial clinical diagnosis of acute pyelonephritis was made. The urinalysis showed microhaematuria as well as numerous pus cells. The urine microscopy and culture yielded a growth of *Klebsiella* that was sensitive to ciprofloxacin. The initial white blood cell count (WBC) showed left shift with toxic granulations and mild eosinophilia. Subsequent WBC results after the resolution of acute infection showed marked eosinophilia (30%). The electrolyte, urea and creatinine results were within normal range.

Abdominal ultrasound showed bilateral hydroureteronephrosis that was more severe on the left, which was presumed to be due to distal outlet obstruction. An intravenous urography, which showed prompt excretion on the right and delayed excretion of about 15 minutes on the left, also revealed gross dilatation of the pelvicalyceal systems and the ureters down to the levels of L3 and L5 vertebrae on the left and right respectively (Figure 1a & b). Thereafter, both lower ureters showed irregular narrowing with some beading appearance. The urinary bladder was well distended with contrast, showed irregular opacification and the terminal ureters gave a ‘cow horn’ appearance with it. These appearances were suggestive of bilateral lower ureteral stricture and some fibrosis of the urinary bladder.

The patient was scheduled for bilateral ureteric resection and re-implantation. At surgery, the ureters were beaded particularly in the lower 1/3; excised and bilateral ureteroneocystostomy with Boari flap and
Psoas hitch reconstruction was done. The histopathology of the excised ureters showed numerous schistosoma ova within the wall of the ureters with extensive submucosal fibrosis (Figure 2). He was discharged 2 weeks after admission with a combined dose of praziquantel (40 mg/kg) and artemether. A repeat intravenous urography, done 6 months after surgery, showed good urinary empty into the bladder. He was in good state of health at the last clinic visit.

**DISCUSSION**

Schistosomal infections cause destructive granulomatous inflammation in various organs in the body with intense fibrocollagenous tissue deposition.\(^1\) The highest prevalence and greatest intensity of schistosomal infection in disease-endemic zones occur in children aged 10-16 years.\(^5\) New irrigation schemes have resulted in increased prevalence of infection particularly in countries where there is endemicity.\(^6\) The initial effect of *S. haematobium* infection may result in gross or microscopic haematuria but it is the late effects associated with chronic infection that exert greater socio-economic burden on the community.

Following schistosomal infection, the adult worms live in pairs, mate and continue to lay eggs for several years before death. The pathophysiology of schistosomiasis in human has been shown to be related to the antigens released from the eggs trapped in tissue.\(^1\) Immune-complex mediated inflammatory reactions bring about granuloma formation comprising macrophages, T-lymphocytes and eosinophils. There may be an accompanying peripheral eosinophilia in acute phase of infection but in chronic phase only tissue eosinophilia persists. The burden of the disease has been shown to correlate well with the intensity of the released eggs and eosinophil cationic proteins in urine.\(^7\)

*S. haematobium* infection of the ureter is often bilateral affecting the lower 1/3 of the ureter due to spread of the parasite from the vesical plexus as in the patient. Eggs are found in all the layers of the ureter with mural fibrosis and loss of muscle layer.\(^3\) Chronic ureteral affection will invariably lead to stricture, obstructive hydroureter and hydronephrosis leading to impaired renal function and renal failure. Acute pyelonephritis, as seen in the case presented, may complicate the obstructive hydroureter. The spread may also involve other parts of the urinary system such as the seminal vesicle, prostate gland, vas deferens and testes.\(^3\)

Diagnosis of urinary schistosomiasis is based on clinical history, high index of suspicion and targeted laboratory investigations. Microscopic demonstration of eggs with specie-specific morphology in urine and seminal fluid examination is highly diagnostic. Immunodiagnostic assays such as Falcon Assay Screening Test (FAST), Enzyme-Linked Immunosorbent Assay (ELISA) and immunoblot assays for specific antibodies to *S. mansonii* and *S. haematobium* adult worm microsomal antigens may be complimentary.\(^8\) Abdominal ultrasound, urography and cystoscopy are invaluable means of assessing the extent of involvement of the urinary tract in the *S. haematobium* infection. In addition, cystoscopy would facilitate mucosal biopsy for histopathological diagnosis. Generally, medical treatment with praziquantel is the most effective means of treatment but combination with antimalarial artemether has been noted to achieve better result in some clinical trials.\(^9\) In few instances, as in this patient, surgical intervention such as resection and re-implantation of the ureter may be necessary to relieve obstructive hydroureter due to stricture.\(^10\)

Though schistosomiasis is not uncommon in Nigeria, ureteric complications requiring re-implantation surgery is not frequent.\(^11\)

In conclusion, national policies targetted at communities regarded as hot spots in terms of endemicity by improving access to potable water, early treatment of infected individuals and control of infective snails will no
doubt reduce the morbidity associated with 
*S. haematobium* infection, and may invariably obviate the 
need for surgical intervention.

**REFERENCES**


