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Case Report

Urinary schistosomiasis in a young female child

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Abstract

Schistosomiasis is a water-borne parasitic disease. It is endemic in tropical and subtropical countries, mainly in Africa and the eastern Mediterranean region. We report a case of an 11-year-old female who attended our hospital for terminal haematuria and irritative voiding symptoms for two years. She has been taking multiple courses of antibiotics and parasitic medications but has not improved. Later she visited our hospital. After a thorough history and clinical examination, we suspected Schistosoma haematobium and started her on praziquantel; she responded quickly. Later her urine samples showed dead worms and eggs identified as Schistosoma Hematobium in her urine sediment. S. haematobium cases are rarely seen in India, especially in Karnataka. The epidemiological and clinical significance of S. haematobium has been discussed.

Introduction

Schistosomiasis is a water-borne parasitic disease that affects 200 million people and threatens 600 million in more than 76 countries. It is endemic in tropical and subtropical countries, mainly in Africa and the eastern Mediterranean region. The infection can be seen nowadays in countries where the disease is not endemic because of the increase in travelling for tourism, business and education. This report, we present an 11-year-old female who had urinary symptoms after long-standing swimming in a local lake.

Case Presentation

An 11-year-old female had been swimming in a local lake for a year. She started having symptoms last month of swimming. She had intermittent, painless terminal hematuria and irritative voiding symptoms. She has visited multiple hospitals and met many doctors in and around Bangalore. Her medical history was unremarkable. Before coming to us, she has taken various antibiotics and parasitic medications, especially albendazole and mebendazole. No significant findings were found during the physical examination. Blood

count showed eosinophilia (15.80%), and renal function was normal. The urine sediment contained 20 erythrocytes and eight leukocytes per field. Based on history and clinical examination, I suspected Schistosoma haematobium, hence started on Praziquantel 20mg/kg 2 times a day regime. Next couple of days, she improved entirely and had no residual symptoms. Still, after starting treatment, she could collect her urine, which showed numerous dead parasites and eggs, which we have confirmed as Schistosoma haematobium, which had a delicate terminal spine that was wide at the base and rounded at the tip. We followed her for three months and were given treatment accordingly. She completely recovered and had no residual symptoms.

Discussion

chistosomiasis is a rare disease and remains a significant health problem in many tropical countries. Its incidence is increasing in developed countries due to immigrant populations and tourists.

Ten species of schistosomes can infect humans, but genitourinary tract infection is caused by the Schistosoma haematobium species. It affects patients at a much younger age with males predominating over females 5.6 times.1

Schistosomiasis enters the body through prolonged contact with infected water. The parasite is excreted from the body via urine and faeces into fresh water, and the miracidia eventually infect its intermediate hosts, the freshwater snails, where they develop into cercariae. The larvae (cercariae) are released from snails into the water and penetrate human skin.2 It enters the subcutaneous tissues, and then the bloodstream migrates to the lungs, then to the liver, and after six weeks, finally, the mature worms mate. After maturation, the adult worm migrates into the mesenteric, perivesical venous plexuses and small, thin-walled vessels in the genitourinary system. During the active phase, viable adult worms deposit eggs that induce a granulomatous response with the formation of polypoid lesions. The inflammation may manifest as well-circumscribed granulomas or as a diffuse cellular infiltrate. Eosinophils and neutrophils usually predominate in the infiltrates, but plasma cells, lymphocytes, macrophages, and foreign-body giant cells are also present. During this time, eggs are excreted in urine. Adult worms may live for many years after the initial infection. After the death of the adult worms, no viable eggs remain in the urine, and large numbers of calcified eggs can be found in the wall of the bladder and other affected tissues.3

Clinical findings and outcomes are due to egg deposition, the inflammatory response and histopathological

changes. They range from mild symptoms such as hematuria, leukocyturia, urinary tract complaints, tender abdomen, and supra-pubic tenderness to chronic iron deficiency and anaemia, scarring and deformity of the ureters and bladder, chronic bacterial superinfection, severe damage of urinary tract organs, and ultimately renal failure. The urinary bladder is the most affected area of the urogenital tract. The urethra, seminal vesicles, prostate gland, deferent ducts, epididymis, and testis are the other parts that may be affected. Such involvement causes prostatitis, urethral stenosis, and perineal pain.4

The diagnosis strongly depends on the physician's awareness of the infection as a possible differential diagnosis. The disease should be suspected, especially if there is a history of travel to an endemic area and bathing in fresh water in such places, a history of a pruritic reaction on an exposed site of the skin after bathing, or an unexplained febrile illness several weeks after the travel.

A definitive diagnosis can only be made with evidence of viable eggs in the urine, stool, or biopsy specimens.

Visualisation of eggs in the urine is the most sensitive and specific method for diagnosing active schistosomiasis. S. haematobium eggs have a delicate terminal spine 2 to 3 μm wide at the base, rounded at the tip, and 5 to 10 μm long. Eggs may not be detected in the urine in chronic parasitation stages.5-7

Radiographic studies are helpful for the diagnosis in such cases. In the acute phase, nodular bladder wall thickening is observed at urography or cross-sectional imaging. The chronic phase is characterised by a contracted, fibrotic, thick-walled bladder with calcifications resulting from egg deposition along the mucosal membrane. Immunoassay methods such as ELISA and RIA are sensitive but not specific and can be considered in early schistosomiasis when there is a strong suspicion. The serological immunofluorescence antibody test for the presence of particular antibodies is a sensitive marker of acute and chronic infection in some cases. Evaluation of the eosinophil cationic protein in urine has been used as a sensitive method for detecting early urinary tract pathology. The final diagnosis is based on granulomas and Schistosoma eggs in the submucosa in bladder biopsies.8

The medical treatment of urinary schistosomiasis is praziquantel, given orally as a single or divided dose of 40– 60 mg/kg. In adult schistosomes, praziquantel induces vesication, vacuolisation, and disintegration of the tegument. General efforts to control schistosomiasis focus on interrupting the life cycle at snail-human and human-snail transmission. The infection may recur in adults living in endemic areas as chronic reinfection produces incomplete immunity.9

A significant complication of chronic S.10 haematobium infection is bladder carcinoma. Squamous cell carcinoma is the most common histological type since it arises on top of squamous metaplasia resulting from chronic cystitis. There is a less common correlation with transitional cell carcinoma—most tumours present at an advanced stage. Most cases are muscle invasive. Hence radical cystectomy is the main line of treatment.11

The clinician should suspect this clinical entity, especially in patients with hematuria and a history of travelling to countries such as Asia and South Africa. Also, people are bathing and swimming in fresh lakes.

Reference

1. Brinkmann UK, Werler C, Traoré M, Korte R: The National Schistosomiasis Control Programme in Mali: objectives, organization, results. Trop Med Parasitol. 1998, 39 (2): 157-161.
2. Dabo A, Sow MY, Sangaré L, Maiga I, Keita A, Bagayoko Y, Kouriba B, Doumbo O: Transmission de la schistosomose urbaine et prévalence des helminthoses intestinales à Bamako, Mali. Bull Soc Pathol Exot. 2003, 96 (3): 187-190.
3. World Health Organization: World Health Assembly endorses WHO's strategic priorities. Geneva: 2001 World Health Organization
4. World Health Organization: The World Health Assembly Resolution (WHA 54.19). 2001, Geneva, [http://www.who.int/inf-pr-200/en/pr2001WHA-6.html]
5. World Health Organization: The evidence is in/deworming helps meet the Millennium Development Goals (WHO/CDS/CPE/PVC/2005.12). Geneva: 2005 World Health Organization
6. National Control Programme for Schistosomiasis and Soil-transmitted helminthiasis (STHs): The main results of Action Plan 2003-2007 of fighting against Schistosomiasis and Soil-transmitted Helminthiasis. Report of NCPSSHs. Tech Report Series. 2007, Bamako, 7p-
7. Nour NM, Fayed MA, Hussein SM, Shaheen HI, Abdel-Raheam RS: Prevalence of morbidity of schistosomiasis among preschool children in Bani-Suef governorate. J Egypt Soc Parasitol. 1990, 20 (2): 793-803.
8. Bosompem KM, Bentum IA, Otchere J, Anyan WK, Brown CA, Osada Y, Takeo S, Kojima S, Ohta N: Infant schistosomiasis in Ghana: a survey in an irrigation community. Trop Med Int Health. 2004, 9 (8): 917-22. 10.1111/j.1365-3156.2004.01282.x.

9. Odogwu SE, Ramamurthy NK, Kabatereine NB, Kazibwe F, Tukahebwa E, Webster JP, Fenwick A, Stothard JR: Schistosoma mansoni in infants (aged < 3 years) along the Ugandan shoreline of Lake Victoria. Ann Trop Med Parasitol. 2006, 100 (4): 315-26. 10.1179/136485906X105552.

10. Dabo A, Bary B, Kouriba B, Sy A, Coulibaly S, Doumbo O: Interest of Community Direct Intervention (ComDI) as schistosomiasis control strategy in Mali. Bull Of WHO.

11. Dabo A, Doucouré B, Koita O, Diallo M, Kouriba B, Klinkert MQ, Doumbia S, Doumbo O: Réinfections par Schistosoma hæmatobium et mansoni à l'Office du Niger au Mali malgré la prise répétée de praziquantel. Méd Trop. 2000, 60: 351-355.