



Case Series

Schistosomiasis beyond the norm: A review of uncommon manifestations on the cervix, prostate, bladder, and appendix

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Abstract

Schistosomiasis, a parasitic infection caused by *Schistosoma* species, predominantly affects the urinary and gastrointestinal tracts. This review aims to explore the less commonly discussed manifestations of schistosomiasis in the cervix, prostate, bladder, and appendix. Schistosomiasis can rarely affect these organs causing conditions like chronic inflammation, granulomas, and increased cancer risk. Understanding these atypical manifestations is crucial for accurate diagnosis and effective management of schistosomiasis. This review consolidates existing literature and case studies to provide insights into these uncommon presentations and underscores the need for heightened clinical awareness in regions where schistosomiasis is endemic.

Keywords: Cervix, Schistosomiasis, Carcinogenesis, Appendectomy, Hematuria

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1. Introduction

Schistosomiasis, caused by trematodes of the genus *Schistosoma*, remains a significant public health issue in many tropical and subtropical regions. Traditionally, the disease is recognized for its impact on the urinary and gastrointestinal tracts. However, less common manifestations of schistosomiasis in other anatomical sites can present significant diagnostic challenges and clinical complexities.

Involvement of the cervix by *Schistosoma haematobium* can lead to chronic inflammation and lesions.¹ Prostatic schistosomiasis, although rare, can result in granulomatous inflammation that may be misinterpreted as malignancy, complicating the diagnostic process and chronic inflammation induces carcinogenesis.² The bladder, a well-known site of schistosomiasis pathology, can develop chronic cystitis, fibrosis, and an elevated risk of squamous cell carcinoma due to persistent infection.³ The appendix, while infrequently involved, can exhibit symptoms similar to appendicitis, leading to potential misdiagnosis.⁴

This review aims to consolidate current knowledge on these rare presentations of schistosomiasis, highlighting the importance of recognizing and accurately diagnosing infections in atypical locations. By examining the clinical manifestations and pathological findings associated with cervical, prostatic, bladder, and appendiceal schistosomiasis, we hope to enhance clinical awareness and improve management strategies for affected patients.

2. Case 1

A 28-year-old male from an endemic region in Africa presented with a 2-day history of acute right lower quadrant abdominal pain, fever, nausea, and loss of appetite. His physical examination revealed localized tenderness in the right lower abdomen with signs of peritoneal irritation. Laboratory results showed an elevated white blood cell count, and an abdominal ultrasound suggested an inflamed appendix, consistent with acute appendicitis. The patient underwent an emergency laparoscopic appendectomy, which was uncomplicated. The appendix was sent for histopathological analysis, which revealed appendicitis and

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the presence of *Schistosoma* eggs embedded in the appendix wall. (Figure 1)

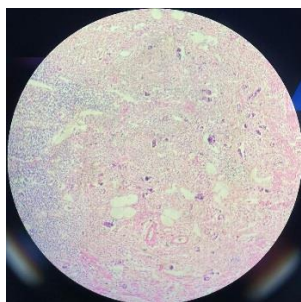


Figure 1: Sections show wall of appendix with calcified eggs of schistosomiasis embedded in the wall.

Given the incidental finding of schistosomiasis, the patient was started on praziquantel treatment and is being closely monitored for any further complications. He had an uneventful recovery and was discharged with instructions for follow-up care.

3. Case 2

A 47-year-old male from an endemic region in Africa presented with a 6-month history of progressive dysuria, frequent urination, and intermittent hematuria. The patient also reported lower back pain and occasional pelvic discomfort. He denied any significant weight loss, fever, or nocturia. On physical examination, the patient had mild tenderness in the lower abdomen, and a digital rectal exam revealed a slightly enlarged prostate, without any palpable masses. Laboratory tests showed mild leucocytosis, and a serum prostate-specific antigen (PSA) level was mildly elevated. Transrectal ultrasound indicated a mildly enlarged prostate. The patient was referred for a prostate biopsy to exclude carcinoma, which revealed the presence of *Schistosoma* eggs, confirming the diagnosis of prostatic schistosomiasis. (Figure 2)

The patient was started on praziquantel treatment and showed significant improvement in symptoms

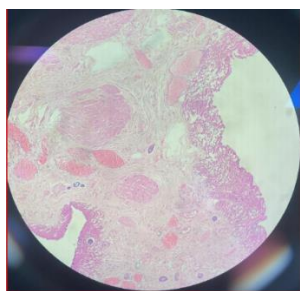


Figure 2: Sections show prostatic tissue with calcified eggs of schistosomiasis.

4. Case 3

A 20-year-old female from an endemic region in Africa presented with a 3-month history of abnormal vaginal bleeding and pelvic pain. She had a history of irregular

menstruation and infertility but had not experienced any significant weight loss, fever, or dysuria. On physical examination, the patient had a non-tender cervix, with more than 75% of aceto-white areas. A Pap smear showed atypical squamous cells, and further biopsy confirmed the presence of high grade squamous intraepithelial lesion. The histopathological examination also revealed inflammation with *Schistosoma haematobium* eggs within the cervical tissue. Given her history and findings, the patient was treated for schistosomiasis with praziquantel in addition to undergoing appropriate oncological management for cervical lesion. She is being closely monitored for further progression of both conditions. (Figure 3)

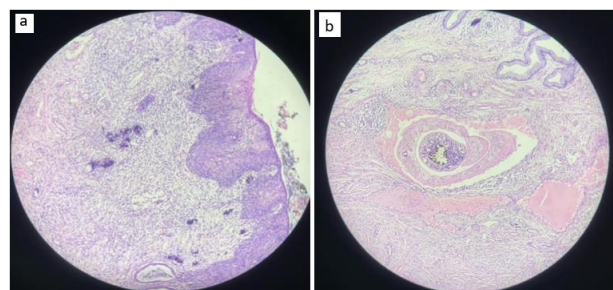


Figure 3: a,b: Sections show wall of cervix displaying high grade squamous intraepithelial lesion. The sub-epithelium shows calcified eggs and adult worm of schistosomiasis

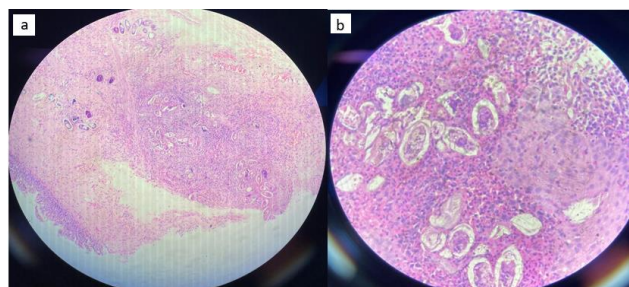


Figure 4: a,b: Sections show wall fragments of bladder tissue with squamous cell carcinoma with eggs of schistosomiasis

5. Case 4

A 60-year-old male from an endemic region in Africa presented with a 6-month history of painless hematuria, urinary frequency, and dysuria. He also reported a history of recurrent urinary tract infections. The patient had no significant history of weight loss, fever, or flank pain. On physical examination, there were no palpable abdominal masses, and digital rectal examination revealed no abnormalities. Urinalysis showed microscopic hematuria, and imaging studies, including a CT scan, indicated a mass in the bladder wall. Cystoscopy revealed an irregular, ulcerated lesion on the bladder mucosa. A biopsy of the bladder mass was performed, and histopathological examination confirmed urothelial carcinoma. Additionally, inflammation and the presence of *Schistosoma haematobium* eggs were identified within the bladder tissue, suggesting concurrent schistosomal

infection. The patient was started on praziquantel for schistosomiasis and referred for appropriate management of urothelial carcinoma, including surgical intervention and possible chemotherapy. He is under regular follow-up to monitor both conditions. (Figure 4)

6. Discussion

Schistosomiasis, caused by trematodes of the genus *Schistosoma*, is well-documented for its impact on the urinary and gastrointestinal tracts. However, the disease is less common manifestations in the cervix, prostate, bladder, and appendix provide important insights into its broader clinical implications. Understanding these atypical presentations is crucial for accurate diagnosis and effective management.

Globally, schistosomiasis affects at least 240 million people each year with a high proportion of cases in sub-Saharan Africa. The infection presents a wide range of symptoms mainly at the gastrointestinal and urogenital level. Cases of schistosomiasis-related appendicitis are seldom reported.^{4,5}

Schistosomiasis is a parasitic waterborne disease caused by blood flukes of the genus *Schistosoma*.² Six species infect humans, namely *Schistosoma guineensis*, *Schistosoma haematobium*, *Schistosoma intercalatum*, *Schistosoma japonicum*, *Schistosoma mansoni*, and *Schistosoma mekongi*. Although all species are able to cause disease, the 3 predominant are *S. haematobium*, *S. mansoni*, and *S. japonicum*.³

Urinary schistosomiasis and its severe complications, mainly bladder cancer, are scarce in non-endemic areas. The deficiency in knowledge and clinical experience of schistosomiasis may lead to inadequate management. Highlighting these topics may be of value, especially with the increased immigration from endemic low-/middle-income countries (LMIC) to non-endemic high-income countries (HIC). Schistosomiasis is a parasitic infection endemic in many low- and middle-income countries. It can affect various systems but is best known for its effect on the urinary system. *Schistosoma haematobium* (SH) infecting the urinary bladder was considered by the IARC as group 1 definitive biological carcinogenic agent. Several carcinogenic pathways have been postulated but the exact mechanism(s) are not defined yet. A more thorough understanding of the parasite life cycle was explored to help eradicate the infection especially for the immigrants from endemic areas. This may prevent or slow down the process of carcinogenesis that leads to *Schistosoma*-associated bladder cancer (SA-BC), which is usually, but not conclusively, squamous cell carcinoma. Treatment of SA-BC generally follows the same guidelines as urothelial *Schistosoma*-non-associated bladder cancer (SNA-BC) management; however, prospective trials to confirm and refine the treatment approach for SA-BC have been relatively limited.³

Schistosomiasis and its association with ectopic pregnancy, infertility, abortion, and cervical lesions similar to STI or cervical cancer have been described in many case reports.⁶ Cervical schistosomiasis causes damages of the epithelium and these lesions, if manifest before sexual debut, could become considerable co-factors for the transmission of viral infections such as HIV and HPV infections in early ages.^{7,8}

7. Conclusion

The atypical manifestations of schistosomiasis in the cervix, prostate, bladder, and appendix highlight the importance of broadening the differential diagnosis in regions where schistosomiasis is endemic. Clinicians must be aware of these less common presentations to avoid misdiagnosis and ensure appropriate treatment. Further research and case studies are needed to enhance our understanding of these rare manifestations and improve diagnostic strategies.

8. Source of Funding

None.

9. Conflict of Interest

None.

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