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An Unusual Case of Mesenteric Schistosomiasis Presenting as Bowel Obstruction in a Child

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Abstract

Mesenteric schistosomiasis is a rare but significant cause of intestinal obstruction, particularly in endemic regions. We report a case of a 12-year-old boy from Masese Landing Site, Uganda, who presented with progressive abdominal distension, vomiting, and constipation—symptoms indicative of bowel obstruction. Surgical exploration revealed extensive adhesions and nodular lesions, necessitating biopsies. Histopathological examination confirmed intestinal schistosomiasis caused by Schistosoma mansoni. This case highlights the need for heightened clinical awareness, early diagnosis, and prompt intervention in endemic areas to prevent complications of chronic schistosomiasis.

Keywords: *Bowel obstruction, Intestinal schistosomiasis, Granulomatous inflammation, Schistosoma mansoni*

1. INTRODUCTION

Schistosomiasis is a neglected tropical disease caused by trematode parasites of the *Schistosoma* genus, transmitted through contact with freshwater contaminated with the larval stage (cercariae) [1]. *Schistosoma mansoni* is the predominant species in sub-Saharan Africa, including Uganda, and primarily affects the intestines and liver [2]. The disease burden is highest in communities with poor sanitation and frequent exposure to freshwater, such as fishing villages along Lake Victoria [3].

Intestinal schistosomiasis is a chronic condition characterized by intermittent abdominal pain, diarrhea, and hematochezia. Prolonged infections can lead to granulomatous inflammation, fibrosis, and strictures, resulting in complications such as bowel obstruction and adhesions [4]. Mesenteric schistosomiasis, a rare manifestation of the disease, occurs when *Schistosoma* eggs become lodged in the mesenteric vessels and tissues, triggering chronic inflammation and fibrosis [5].

While schistosomiasis is typically diagnosed through stool microscopy, serology, or antigen detection, severe complications often necessitate histopathological evaluation to confirm tissue involvement. This case highlights mesenteric schistosomiasis as a rare but serious cause of bowel obstruction in children from endemic areas, underscoring the importance of early

diagnosis and timely intervention to prevent long-term morbidity

2. Case Presentation

2.1. Clinical History

A 12-year-old boy from Masese Landing Site, located on the eastern shoreline of Lake Victoria in Jinja District, Uganda, presented with progressive abdominal distension, vomiting, and constipation—symptoms suggestive of intestinal obstruction. An initial exploratory laparotomy revealed extensive adhesions, necessitating adhesiolysis and the creation of an ileostomy to relieve the obstruction (fig 1). However, during a subsequent attempt at colostomy reversal, dense adhesions and multiple nodules were observed on the omentum, mesentery, and antimesenteric surfaces of the ascending, transverse, and descending colon (fig 2). Due to the complexity of the adhesions and the presence of nodules, a biopsy of the lesions was performed. Given the extensive disease involvement, a double-barrel ileostomy was created, leaving the initial ileostomy unreversed.

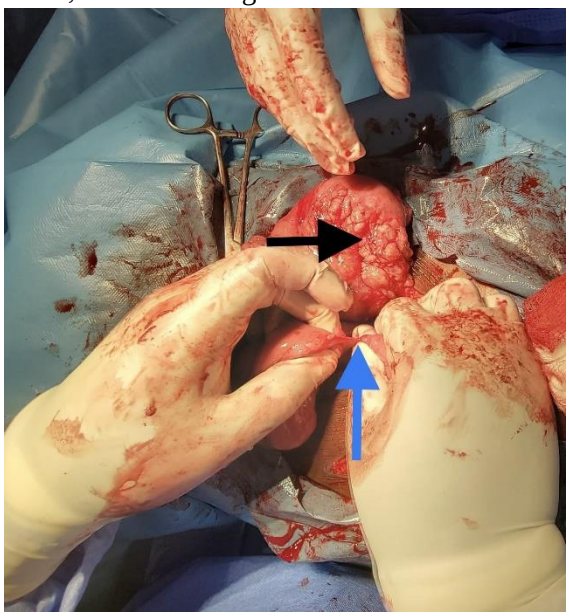

Figure 1. *Showing adhesions (blue arrow) and intestinal serosal nodules (black arrow)*

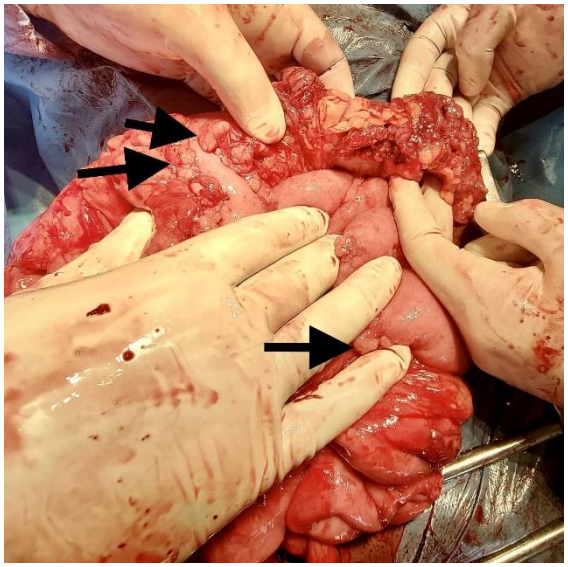

Figure 2. *Showing mesenteric and serosal nodules*

2.2. Histopathological Findings

Biopsy specimens from the nodular lesions were submitted to the Department of Pathology at Mulago National Referral Hospital (MNRH) for evaluation. Two Hematoxylin and Eosin (H&E)-stained slides were microscopically analyzed. Histological examination revealed granulomatous inflammation, characterized by clusters of lymphocytes, plasma cells, eosinophils, and epithelioid histiocytes.

Additionally, foreign body-type giant cells were observed engulfing *Schistosoma* eggs,

confirming a diagnosis of intestinal schistosomiasis.

The mesenteric nodule biopsy contained numerous non-calcified *Schistosoma* eggs, surrounded by a chronic granulomatous reaction composed of epithelioid histiocytes, plasma cells, lymphocytes, and scattered eosinophils. Multinucleated foreign body giant cells were also noted, engulfing degenerated *Schistosoma* eggs (fig 3). Modified Ziehl-Neelsen (ZN) staining demonstrated the acid-fast properties of the *Schistosoma* egg shells. Based on these findings and the epidemiological context, the species was identified as *Schistosoma mansoni*. (fig 4)

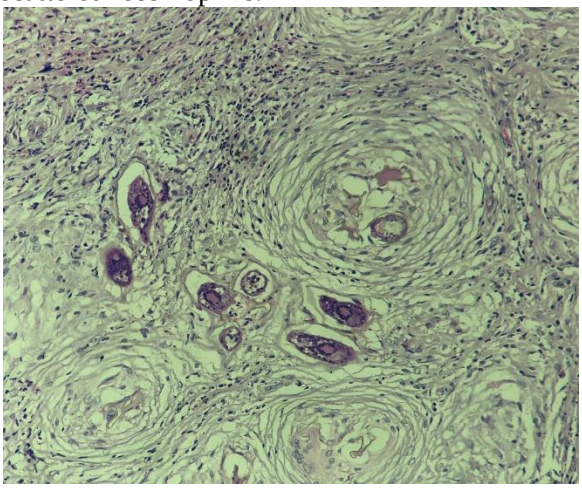

Figure 3. *H&E sections showing non-calcifying schistome eggs surrounded by chronic granulomatous reaction, X400*

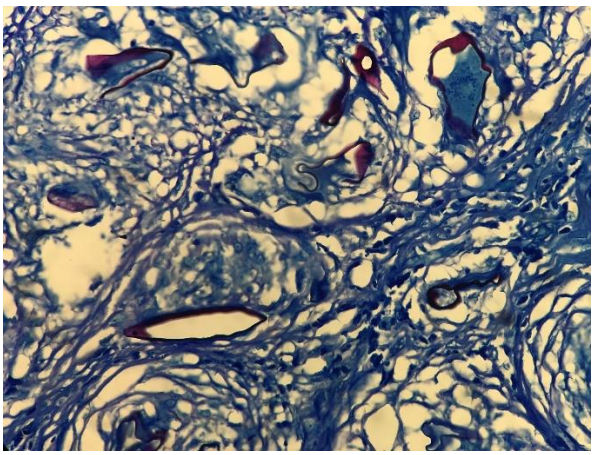

Figure 4. *Modified ZN showing the acid-fast properties of the Schistosoma egg shells.*

3. DISCUSSION

Schistosomiasis remains a significant public health concern in sub-Saharan Africa, with Uganda reporting high endemicity, particularly in communities near freshwater bodies such as Lake Victoria [6]. *Schistosoma mansoni*, the causative agent of intestinal schistosomiasis, has a complex life cycle that involves freshwater snails as intermediate hosts [7]. Humans acquire the infection through skin penetration by free-swimming cercariae during activities such as fishing, swimming, or washing clothes in contaminated water [8].

Once inside the human host, the parasites migrate to the mesenteric veins, where they mature and produce eggs. Some eggs are excreted in stool, continuing the transmission cycle, while others become trapped in intestinal and mesenteric tissues, triggering granulomatous inflammation and fibrosis [9].

While intestinal schistosomiasis is common and well-documented, mesenteric involvement is rare and often underreported, particularly in pediatric cases [10]. The deposition of *Schistosoma* eggs in mesenteric tissues elicits a host immune response that leads to granuloma formation around the eggs. This reaction is primarily driven by a Th2-mediated immune response, involving cytokines such as interleukin (IL)-4, IL-5, and IL-13, which promote eosinophilic infiltration and fibrotic tissue remodeling [11]. Over time, these granulomas coalesce into fibrotic nodules, which disrupt normal vascular and intestinal function. Severe cases may result in extensive

fibrosis, adhesions, and vascular compromise, leading to bowel obstruction, as seen in this case.

The presence of non-calcified *Schistosoma* eggs in the mesenteric nodules of our patient suggests an ongoing active infection rather than a resolved or chronic inactive state. The foreign body reaction involving multinucleated giant cells is characteristic of chronic schistosomiasis, highlighting the host's attempt to contain and degrade the parasitic eggs. This persistent inflammatory response is responsible for complications such as mesenteric ischemia, strictures, and adhesions, ultimately leading to mechanical bowel obstruction [6].

Diagnosing mesenteric schistosomiasis is particularly challenging because its presentation can mimic other causes of bowel obstruction, including intestinal tuberculosis, malignancies, Crohn's disease, and other inflammatory bowel disorders [1]. Routine diagnostic tools such as stool microscopy, serology, and antigen detection tests may be insufficient in severe or atypical cases, necessitating histopathological evaluation of biopsy specimens. Imaging techniques such as ultrasound and computed tomography (CT) scans can reveal mesenteric thickening, nodules, or vascular abnormalities suggestive of schistosomiasis-related fibrosis [12].

Treatment involves a combination of surgical and pharmacological approaches. In cases of acute complications such as bowel obstruction, surgical intervention—including adhesiolysis, resection, and stoma formation—may be required. However, definitive treatment requires antiparasitic therapy with praziquantel, which remains the first-line drug for schistosomiasis [3]. While praziquantel effectively kills adult worms, it does not reverse established fibrosis, underscoring the importance of early diagnosis and treatment to prevent severe complications [13]. In endemic areas, public health strategies such as mass drug administration (MDA), snail control, and improved sanitation are essential for reducing disease transmission and preventing long-term morbidity [14].

This case underscores the need for increased awareness of mesenteric schistosomiasis as a rare but severe cause of bowel obstruction, particularly in endemic regions. Given its potential for misdiagnosis, clinicians should maintain a high index of suspicion when evaluating pediatric patients with unexplained abdominal pathology in schistosomiasis-endemic areas.

4. Conclusion

Mesenteric schistosomiasis is an uncommon but serious manifestation of *Schistosoma mansoni* infection, capable of causing significant gastrointestinal morbidity. This case underscores the necessity for heightened awareness among clinicians, particularly in endemic areas, to facilitate early recognition and intervention. Improved sanitation, mass drug administration, and enhanced public health measures are critical in mitigating the burden of schistosomiasis in affected communities.

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Ethical Approval

According to local and national regulations, this case report did not require ethical approval.

Consent

Written informed consent was obtained from the patient for the publication of this case and accompanying images. The study adhered to the ethical principles outlined in the Declaration of Helsinki (1975).

Conflict of Interest

The authors declare no conflicts of interest related to this study.

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No specific funding was received from any institution or organization for this study.

Data Availability

All data generated or analyzed during this study are presented in this article. Further information can be obtained from the corresponding author upon request.

Author Contributions

O.P. was responsible for conceptualization, methodology, investigation, and data curation. M.S. contributed to the methodology and performed the initial pathological diagnosis. B.M. performed literature review & drafted the manuscript. T.O., M.A., A.I., O.M., G.A., O.J.K., O.P.B., W.E., B.E., M.J.D., N.J., K.M., A.R., N.G., L.R., B.F., Y.M.., O.M., participated in manuscript review and methodology. T.A. performed the special stains. T.O., N.S.

performed the surgery and removed the biopsy, and K.S. provided the final pathological diagnosis. All authors reviewed and approved the final manuscript.

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