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### Publication Date

2023

### DOI

10.1177/2050313X231190013

Peer reviewed

# Unexpected rapid symptom response after praziquantel to intestinal *Schistosoma mansoni* symptoms: A case report from Rwanda

SAGE Open Medical Case Reports  
Volume 11: 1–3  
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DOI: 10.1177/2050313X231190013  
journals.sagepub.com/home/sco



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## Abstract

The clinical effect of praziquantel on chronic intestinal schistosomiasis in the literature is lacking. We report a patient who presented with 3 years of non-specific abdominal pain and underwent colonoscopy, which revealed colon polyps that, on biopsy, were confirmed to be due to *Schistosoma mansoni*. The patient was given a single dose of praziquantel, and his abdominal symptoms disappeared within 24 h. Patients with abdominal pain in the setting of chronic *Schistosoma* infection should be given praziquantel and assess response clinically.

## Keywords

Schistosomiasis, polyp, praziquantel, symptom

Date received: 21 March 2023; accepted: 10 July 2023

## Introduction

Praziquantel is used to treat schistosomiasis<sup>1</sup> and reduce egg burden.<sup>2</sup> Although the burden of eggs correlated with symptoms like abdominal pain, praziquantel activity on *Schistosoma* eggs has not been reported in the literature.<sup>3–5</sup> Here, we report a case where the administration of praziquantel rapidly resolved chronic abdominal pain in the setting of *Schistosoma*-induced multiple egg nodules in the colon seen on colonoscopy and mesenteric nodules by abdominal computed tomography (CT) scan.

## Case presentation

A 38-year-old male presented to Butare University Teaching Hospital, a tertiary hospital in the Southern Province, Rwanda. He complained of hypogastric pain, excessive flatulence and intermittent constipation over a period of 3 years. He was born and lived in Nyagatare district, Eastern Province, and attested to having swum since childhood in local rivers. He reported no diarrhoea, no fever, weight loss, anorexia or other medical history. The physical exam was normal, with no hepatosplenomegaly, ascites or visible abdominal venomegaly. Prior to presentation, basic investigations including negative multiple direct stool exams for protozoa (worms or eggs), normal liver transaminases and

complete blood count. Due to vague abdominal pain, he underwent esophagogastroduodenoscopy which was normal, and the pain had not previously responded to proton pump inhibitors, mebendazole or tinidazole during the course of his symptoms.

In our center he underwent abdominal CT scan which revealed multiple enlarged pericecal and mesenteric lymph nodes (Figure 1(a)). Repeat colonoscopy revealed multiple nodular lesions in the ascending colon and cecum (Figure 1(b)), and the biopsy revealed intramucosal *Schistosoma mansoni* eggs surrounded by chronic inflammatory cells, including eosinophils. A repeat Kato–Katz test was negative for protozoa (eggs or worms). To complete the investigation

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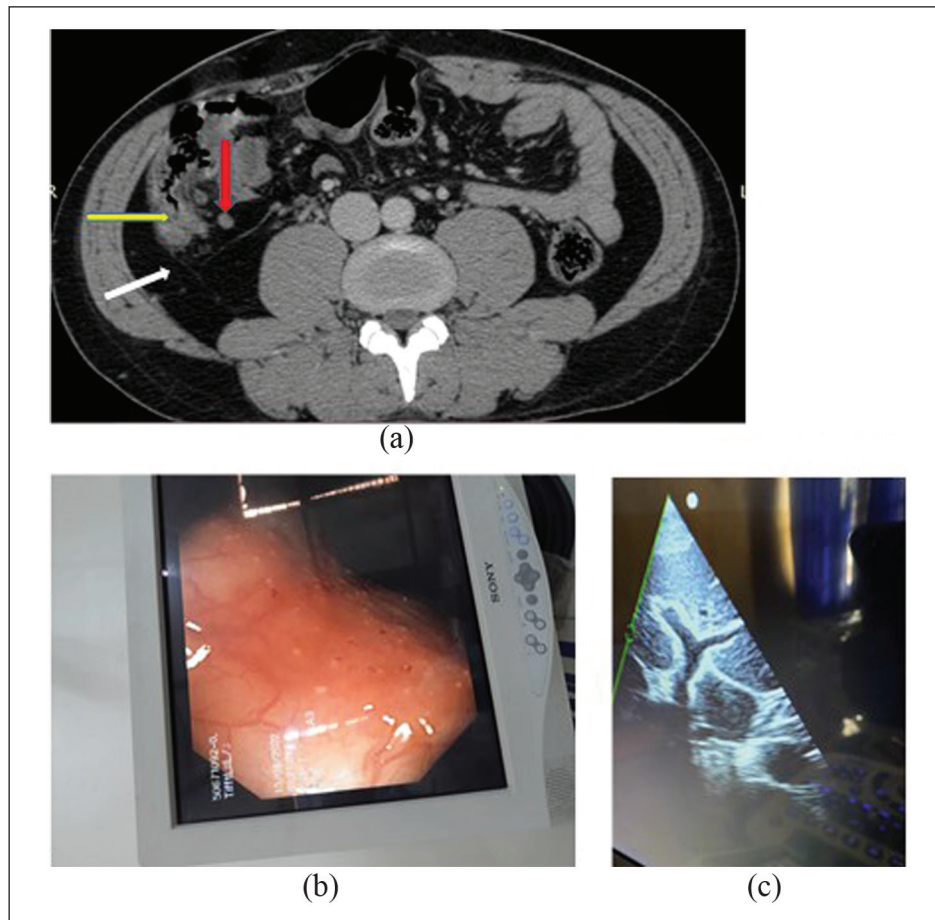
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**Figure 1.** Colonic schistosomiasis. Contrast-enhanced (a) axial CT images illustrating focal nodular thickening enhancement of the ascending colon (yellow arrows), pericolic fat standing (white arrows), and lymph nodes (red arrow). (b) A colonoscopy screen shot by a portable phone shows multiple nodules in the colon. (c) Periportal fibrosis with ultrasound.  
CT: computed tomography.

of intestinal chronic schistosomiasis, abdominal ultrasound revealed periportal fibrosis (Figure 1(c)) with no features of cirrhosis or ascites, and the spleen size was normal. Echocardiography was normal with no features of pulmonary hypertension.

The patient received a single dose of praziquantel 40 mg/kg orally, the standard for treating *Schistosoma*. One week later, the patient was called to monitor his symptom progression. He reported that he took the dose in the evening, and his symptoms were decreasing by the following morning, and within 24 h his symptoms had entirely resolved.

## Discussion

The patient originated from the highest *Schistosoma* endemic district of Rwanda, Nyagatare<sup>6</sup> and had been exposed multiple times with stagnant water by swimming according to his exposure interview. The presence of periportal fibrosis explains the chronicity of the infection while the 3-year history of abdominal complaints would likely be due to intra-abdominal *Schistosoma* nodules as seen by colonoscopy and

abdominal CT scan. The effect of praziquantel on symptoms of chronic *Schistosoma* abdominal pain has not been elucidated in the literature, and in our case clinical response occurred within 24 h. Praziquantel is the drug of choice to treat *Schistosoma*. Its mechanism of action is thought to paralyze the worm due to increased cell membrane to calcium permeability, resulting in dislodgement.<sup>5</sup> The peak plasma concentration of praziquantel following ingestion varies from 1 to 3 h.<sup>7</sup> Kato–Katz analysis of faecal samples for *Schistosoma* eggs is widely used to diagnose schistosomiasis and evaluate drug effectiveness, although it is known to underestimate infection rates<sup>8</sup> and overestimate cure rates.<sup>9</sup> A single dose of praziquantel 40 mg/kg given for deworming in multiple countries resulted in high therapeutic efficacy with an egg reduction rate of 93.4% for *S. mansoni*, 97.7% for *S. haematobium* and 90% for *S. japonicum*.<sup>10</sup>

Egg-induced granulomatous inflammation is one of the manifestations of chronic intestinal schistosomiasis. However, as praziquantel does not act directly on eggs, the rapid response observed here to praziquantel raises questions about the potential for direct impacts on inflammation and

gut function. Apart from its anti-helminthic effect, praziquantel has been reported to have a preventive effect of fibrosis but not to reverse the established fibrosis.<sup>11</sup> Praziquantel can also function as a 5-HT<sub>2B</sub> receptor (serotonin receptor 2B) agonist, the same pathway targeted by some abdominal discomfort medications, including tegaserod and prucalopride.<sup>3</sup> In one case report, the clinical response by symptom relief and weight gain were 2 weeks after treatment.<sup>12</sup>

The apparent resolution of symptoms following praziquantel treatment could be due to anti-schistosomal effects or side effects on fibrosis and or gut motility. The possibility of praziquantel's effect on adult worms in mesenteric veins could not be excluded, as, by limitation, we were not able to differentiate vital from avital eggs in this patient. Despite this, the patient had symptoms over 3 years, and imaging with periportal fibrosis of chronicity was detected.

## Conclusion

Praziquantel treatment may be beneficial to patients with abdominal symptoms that occur in chronic schistosomiasis infections, even in the absence of worms or eggs in the stool.

## Acknowledgements

The authors would like to thank the patient for permission to share his medical history for educational purposes and publication.

## Author contributions

J.P.S., F.B.G. and B.G. drafted, edited and revised the article. B.G. revised and edited the article. J.P.S. and R.G. participated in the care of the patient. All authors approved the submitted article.

## Availability of data and material

No further material to be shared.

## Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

## Ethics approval

Our institution does not require ethical approval for reporting individual cases or case series.

## Informed consent

Written informed consent was obtained from the patient for their anonymized information to be published in this article.

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