

Schistosomal colonic disease

Abdel Rahman El-Shiekh Mohamed, Mohamed Ali Al Karawi, Mohamed Ismail Yasawy

Abstract

This study evaluates 216 patients with schistosomal colonic disease, diagnosed by endoscopic biopsies at the Armed Forces Hospital, Riyadh. The colonoscopic appearance was suggestive of schistosomiasis in 98 of these patients (45.37%), *Schistosoma mansoni* ova in stool was detected in only 24 of these 216 patients (11.11%). The most common histopathological finding in colonic biopsies of these patients was *Schistosoma mansoni* ova in the colonic mucosa with no or mild inflammatory cells infiltrates. These findings correlate with the endoscopic appearances in most patients. The most common symptoms were abdominal pain or distention in 84 patients (38.88%). Sixty five patients (30.09%) had hepatosplenic schistosomiasis. Eight patients had schistosomal polyps and two patients had colonic malignancy in which no association between their malignancy and *Schistosoma mansoni* infection was established. After anti-schistosomal treatment follow up, sigmoidoscopy was normal in 28 patients who previously had abnormal endoscopic appearances. Colonoscopic examination is valuable in colonic schistosomiasis as it can show characteristic colonic lesions and colonic biopsies are diagnostic and correlates with histological findings.

Schistosomiasis is a serious endemic disease in tropics and subtropics. It affects child development and adult productivity. Over 200 million people in the world suffer from schistosomiasis and several other million are exposed to the infection.¹ Two species of schistosomes commonly produce intestinal disease: *Schistosoma mansoni* and *japonicum* and rarely *haematobium* and *intercalatum*. *Schistosoma mansoni* is endemic in Africa, South America, and the Middle East including Saudi Arabia.² In the large intestine, viable ova produce an inflammatory reaction, granuloma formation, papillomatae, ulceration, bleeding, subsequently fibrosis which give rise to the longterm sequelae of the disease.³ Acute schistosomiasis⁴ and schistosomal intestinal disease cause usually diarrhoea with blood and mucus. Exacerbations occur every few weeks. The passage of the ova in stool is frequent in early stages but later when the disease becomes chronic, the ova passage in stool is infrequent and scanty.⁵ There are few studies on schistosomal colonic disease and there is paucity in the literature on schistosomal colonoscopic appearances and the value of colonic biopsies in making a diagnosis.

The aim of this study is to discuss the colonoscopic appearances, histological findings and the value of colonic biopsies in diagnosing *Schistosoma mansoni* infection. It also discusses presen-

tation and complications of schistosomal colonic disease.

Methods

PATIENTS

Between March 1979 and December 1988, 2710 patients with different gastrointestinal tract problems had fibreoptic sigmoidoscopy (1911 patients) or colonoscopy (799 patients) examination at the Gastroenterology Unit, Armed Forces Hospital, Riyadh, Kingdom of Saudi Arabia. Three to six colonic biopsies (0.1-0.6 cm) were taken from each patient with a visible lesion during examination, for histological examination by paraffin section. Two extra rectal biopsies were taken for crush biopsy (squash technique)⁶ in patients suspected of schistosomiasis even if the colonic mucosa looked normal. This technique began to be used in those patients endoscoped since the beginning of 1986. Snare polypectomy was done in patients with polyps. In each patient suspected of schistosomiasis at least three stool specimens were examined for ova by the Formal ether concentration method.⁷ All patients received antischistosomal drugs. Three to six months after treatment follow up sigmoidoscopy was done in 28 patients.

Results

Colonic biopsies for histological examination were taken in 2458 patients from all patients who had sigmoidoscopy or colonoscopy. In 1820 of these patients it showed normal colonic mucosa and an abnormality was reported in the remaining 638 patients (Table I). The most common pathological finding was *Schistosoma mansoni* in 216 patients (200 men and 16 women). Their ages ranged from 11-72 years (mean 36.8). Eight patients had schistosomal polyps. The histological findings are shown in Table II and Figure 1. The endoscopic appearance in these patients are shown in Table III and Figure 2. Sixty eight other patients had adenomatous polyps and 32 had rectal or colonic malignancy, in two of which *Schistosoma mansoni* ova was also seen in their colonic biopsies (one patient with adenocarcinoma of rectum and another renal transplant

TABLE I Abnormal colonic biopsy findings in 638 patients

Colonic biopsy findings	Patients (n)
<i>Schistosoma mansoni</i>	216
Schistosomal polyp	8
Adenomatous polyp	68
Adenocarcinoma colon	18
Adenocarcinoma rectum	8
Other malignant lesions	6
Other specific infection and inflammatory lesions	78
Non-specific colitis or proctitis and others	236

Gastroenterology
Division, Armed Forces
Hospital, Riyadh,
Kingdom of Saudi Arabia
Abdel Rahman El-Shiekh
Mohamed
Mohamed Ali Al Karawi
Mohamed Ismail Yasawy

Correspondence to: Dr A E
Mohamed (C149), Armed
Forces Hospital, PO Box 7897,
Riyadh 11159, Kingdom of
Saudi Arabia.

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TABLE II Histopathology findings in 216 patients with colonic schistosomiasis

Range of inflammatory reaction	Number of patients and colonic layer involved				Patients: Total n
	Mucosa	Lamina Propria	Submucosa	Muscularis Mucosa	
Schistosoma ova with no or mild reaction	53	11	9	2	75
Schistosoma ova with moderate reaction	20	22	6	2	50
Schistosoma ova with severe reaction	13	0	0	0	13
Schistosoma ova with eosinophilic infiltration only	4	0	0	0	4
Schistosoma ova with granuloma	39	7	7	2	55
Schistosoma ova with polyp	8	0	0	0	8
Normal histology positive crush biopsy	11	0	0	0	11
Total	148	40	22	6	216

patient with Kaposi sarcoma). Detailed histological examinations of the colonic biopsies in these two patients showed no association between their malignancy and *Schistosoma mansoni*. Crush biopsy technique (Fig 3) was done in 49 patients, in whom it showed many *Schistosoma mansoni* ova with characteristic lateral spine. In 11 of these patients, the paraffin sections did not show *Schistosoma mansoni* ova. The colonoscopic appearance in these 11 patients was normal. In 64 other patients with normal colonoscopic appearance the histopathological findings showed the presence of schistosoma ova with no or minimal inflammatory cell reaction. In four patients the ova shell was empty with no miracidium seen inside, indicating dead ova. In 22 patients with very little ulceration seen during endoscopic procedure, the histopathological findings showed the presence of ova with moderate to severe inflammatory cell reaction infiltration. Stool examination showed *Schistosoma mansoni* ova in only 24 (11.11%) of these 216 patients.

The most common symptoms in the 216 patients with schistosomal colonic disease are shown in Table IV. Sixty five of these patients had hepatosplenic schistosomiasis. Table V shows the clinical impression on referral for endoscopy. After treatment 103 patients became asymptomatic, 54 patients improved while the remaining 59 patients had no significant improvement as most of these patients had hepatosplenic schistosomiasis.

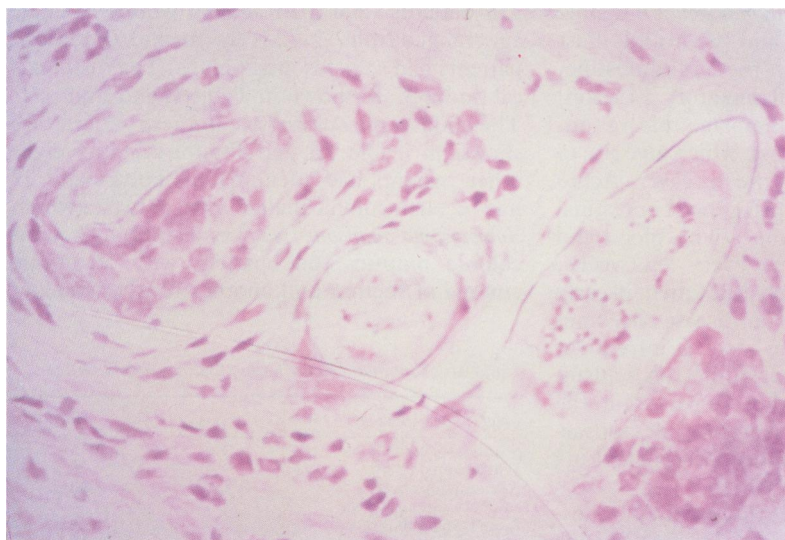


Figure 1: Colonic mucosa showing three *Schistosoma mansoni* ova, surrounded by granuloma. Lateral spine is clearly shown in the ova in the right side.

TABLE III Endoscopic findings in 216 patients with colonic schistosomiasis

Endoscopic appearance	Rectum	Colon	Rectum + colon	Total
Patchy mucosal congestion + petechiae	24	11	26	61
Patchy erosions + ulcerations	9	3	10	22
Telangiectasis	1	2	4	7
Polyps	3	5		8
Normal			118	118
Total	37	21	158	216

After treatment follow up sigmoidoscopy was performed in 28 out of the 98 patients who had abnormal endoscopic appearances. In all 28 patients the endoscopic appearances became normal and colonic biopsies for schistosomiasis also became negative.

Discussion

Schistosomal colonic disease is a major health problem in endemic areas and if not diagnosed and treated early might lead to complications such as chronic intestinal schistosomiasis and hepatosplenic schistosomiasis, which have high morbidity and mortality.

The symptoms of colonic schistosomiasis are

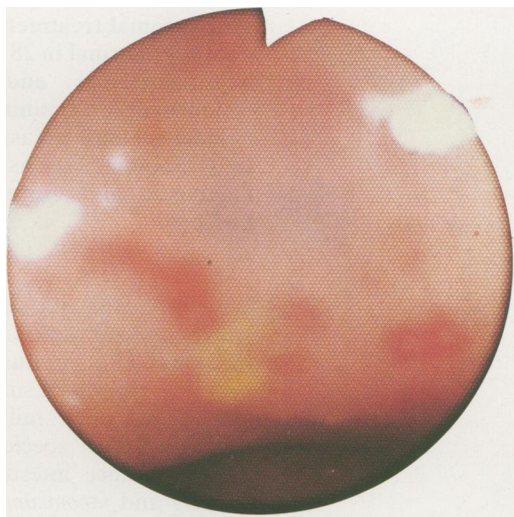


Figure 2: Endoscopic views, showing erosions and tiny ulcerations in rectal mucosa as a result of schistosomiasis (above) and colonic schistosomal polyp (below).





Figure 3: Many *Schistosoma mansoni* ova seen in rectal mucosa (squash or crush biopsy technique).

non-specific and may mimic several other gastrointestinal problems, as shown in Tables IV and V. Therefore an early diagnosis in schistosomiasis is important as in its early stage it is a treatable condition. The new antischistosomal drugs (praziquantel or oxamniquine) are safe and effective in halting the progress of the disease.¹ The diagnosis of acute intestinal schistosomiasis is usually established by finding ova in the stool and this forms no diagnostic problem for the clinician working in endemic areas. The diagnosis of chronic intestinal or hepatosplenic schistosomiasis is not simple, however, as in this condition the passage of ova in stool is infrequent and scanty.⁵ As shown in this study, stool examination might be negative, while rectal or colonic biopsies are positive. This was also shown by Shoeb⁸ who used rectal biopsy transparency technique and was positive in revealing ova in 78% of his patients and found to be superior to stool and rectal swab or curette, in diagnosing *Schistosoma mansoni*.

In this study the squash technique was found to be simple and rapid in showing many characteristic schistosoma ova compared with histological examination by paraffin section. Fibreoptic sigmoidoscopy or colonoscopy may show clearly the colonic lesions as shown in our patients and even in the 118 patients whose

colonic mucosa looked normal, biopsies showed schistosoma ova. This study also showed that the histological findings can be correlated with the endoscopic findings. From 63 patients whose colonic biopsies showed moderate to severe inflammatory reaction, 22 had very little ulceration shown endoscopically and possibly these patients had active disease, while from 75 patients with minimal or no reaction, 71 had normal endoscopic appearances and these had quiescent or chronic disease as most of the latter patients had hepatosplenic form. This might also explain why in chronic schistosomiasis, the presence of ova in stool is usually infrequent and scanty.

Endoscopy is not only diagnostic in patients with schistosomal polyps but in this condition the polyp could be endoscopically excised completely.⁹ Severe rectal bleeding or intussusception can result due to bilharzial polyps.³

As shown in this study and previous studies¹⁰⁻¹¹ that sigmoidoscopy or colonoscopy is an important diagnostic tool in schistosomal colonic disease. Few patients may present with abdominal mass because of pericolic or mesenteric granuloma and may present with intestinal obstruction. In our hospital during the last three years, three patients presented with intestinal obstruction, two other patients had mesenteric vein involvement and three others presented with acute appendicitis (Figure IV) and all had surgery which proved to be caused by complicated intestinal schistosomiasis. These colonic masses, if not investigated properly may be misdiagnosed as carcinoma, lymphoma or Crohn's disease.¹² Colonic malignancy was the clinical impression before referral for endoscopy in eight of our patients.

The development of carcinomatous changes in *Schistosoma mansoni* colonic disease or polyps is not established and such association has only so far been linked with *Schistosoma japonicum*. Chai *et al* from China studied 454 colorectal carcinoma specimens of which 289 were associated with *Schistosoma japonicum* infestation and who had diffuse involvement of the large intestine and a history of 10 years or more of colitic symptoms.¹³ There are no definite reports, however, on the association between colorectal cancer and *Schistosoma mansoni*.³ Dimmettee *et al* studied 98 Egyptian patients with carcinoma of the large bowel and 17 of these had *Schistosoma mansoni* infestation in which detailed histological studies revealed no outstanding features to distinguish parasitic from non-parasitic groups.¹⁴ This histological finding was also established in two of our patients.

In our study only 26 patients (0.96%) had adenocarcinoma of the colon or rectum, which is a low incidence compared with studies published from the West¹⁵ and Far East.¹⁶ As schistosomiasis is endemic in Saudi Arabia and if *Schistosoma mansoni* plays an aetiological role in colonic malignancy, it would have been expected that the incidence of colorectal cancer to be higher in areas where *Schistosoma mansoni* is endemic.

Embolisation of ova to the liver leads to hepatosplenic schistosomiasis which is a major complication of intestinal schistosomiasis, and

TABLE IV Symptoms in 216 patients

Symptoms	Patients (n)
Non-specific abdominal pain	84
Diarrhoea	58
Bleeding per rectum	43
Alternate diarrhoea and constipation	22
Constipation	9

TABLE V Clinical impression in 216 patients before endoscopy

Assessment	Patients (n)
Schistosomiasis	93
Schistosomal portal hypertension	15
Irritable bowel syndrome	66
Inflammatory bowel disease	16
Malignancy	8
Infective diarrhoea	9
Others	9

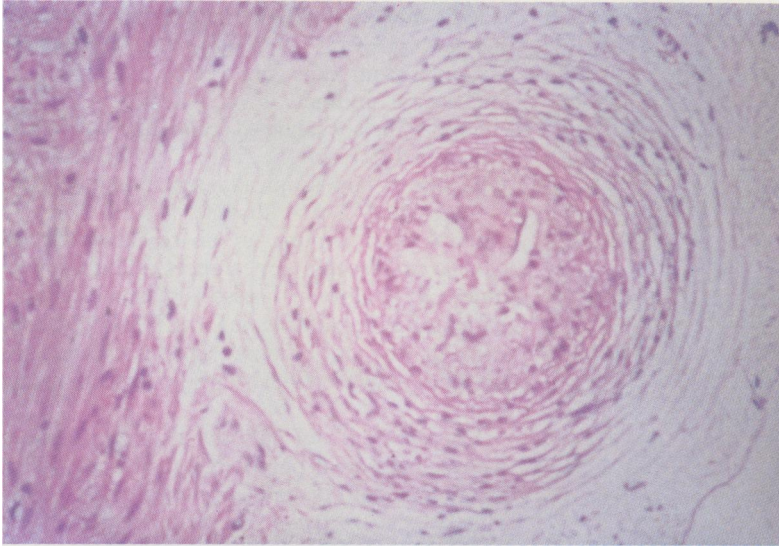


Figure 4: High power field showing schistosoma granulomas in an appendectomy specimen of a patient who presented with acute appendicitis.

bleeding from the resultant oesophageal or gastric varices is a major cause of death. In our unit, 50 patients with hepatosplenic schistosomiasis received sclerotherapy for bleeding oesophageal varices and this was found to be effective in stopping acute bleeding in these patients.¹⁷ The diagnosis in hepatosplenic schistosomiasis is based on visualisation of ova in stool, rectal biopsy or liver biopsy, but the latter might not be possibly caused by coagulopathy. The demonstration of periportal brightness and increased echogenicity in liver ultrasound is also helpful in suggesting the diagnosis.¹⁸

This study has shown that in colonic schistosomiasis there are characteristic colonoscopic appearances related to the stage of the disease and these can be correlated well with the histopathological findings. These abnormal endoscopic findings disappeared in 28 patients after

treatment. It also shows that the colonoscopic biopsies are superior to stool examination in finding *Schistosoma mansoni* ova. Also it shows that *Schistosoma mansoni* infestation does not usually predispose to colorectal malignancy.

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