

Schistosoma mansoni as a cause of bloody stool in children

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ABSTRACT

Objectives: To identify the frequency of *Schistosoma mansoni* as a cause of bloody stool or diarrhea and study the clinical, laboratory, radiological characteristics and regional distribution in Hajjah governorate.

Methods: This was a hospital based study conducted in Hajjah town, from April 1997 to May 1999. Medical charts were reviewed for age, sex, area of residency, clinical presentation, number of previous *Schistosoma mansoni* infections, possible causes of bloody stool or diarrhea, number of hospital visits and results of any radiological studies made.

Results: Three hundred and sixty patients presented to the pediatric clinic with a history of bloody stool, 156

(43%) with *Schistosoma mansoni*, older children formed 83% and boys 79.5%. Ninety five and a half per cent were from Hajjah governorate, 67% were from Hajjah town. Previous *Schistosoma mansoni* infection was found in 19% and in 20% there was other associated parasitic infestation.

Conclusion: *Schistosoma mansoni* is a major health problem in Hajjah governorate. Older boys were the most at risk group. Patients in rural regions had difficulties in reaching the hospital, indicated by their low percentage compared to patients from urban areas.

Keywords: *Schistosomiasis mansoni*, children.

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Schistosoma mansoni (*S.mansoni*) is endemic to extensive areas in Africa, the Arabian Peninsula and other countries.¹ It was classified into intestinal, hepatointestinal and hepatosplenic forms.² The hepatic affection has been graded by the ultrasonic assessment of the thickness of periportal fibrosis into 3 grades.³ The eggs produce inflammation and gross amputation of the intrahepatic veins, portal and periportal granulomas and eventually a coarse perilobular fibrosis (pipe-stem),^{4,5} which leads to hepatosplenomegaly, portal hypertension and esophageal varices then gastrointestinal tract bleeding, the most common cause of death from this disease.⁵ The seriousness of *S.mansoni* has been more explored by identifying rare but important complications such as necrotizing colitis (ischemic colitis),⁶ transverse myelitis,⁷ meningo-myelodradiculitis,⁸ mediastinal mass,⁹ and large bowel

pseudotumor.¹⁰ In one study it was associated with 4% of colorectal carcinomas,¹¹ signet ring carcinoma of the ileocecal valve,¹² glomerulonephritis¹³ pulmonary hypertension resulting in right ventricular pressure overload which lead to left ventricular geometric distortion.⁴ Further, schistosomiasis is an important factor in determining the response to interferon therapy in patients with chronic hepatitis C.¹⁵ The prevalence of *S.mansoni* has been studied in some of the Yemeni governorates such as Taiz,¹⁶ Amran,¹⁷ Aden,¹⁸ and Dhamar,¹⁹ as well as in Yemeni immigrants in the United States of America (USA).²⁰ The incidence of *S.mansoni* in Hajjah was 17% of the total incidence in Yemen.²¹ It is clear that this is a serious disease if not diagnosed and accordingly treated properly. The objectives of this study were to: 1. Identify the frequency of *S.mansoni* as a cause of bloody stool or diarrhea. 2. Study the clinical,

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laboratory, radiological characteristics and regional distribution in Hajjah governorate.

Methods. This retrospective study was carried out in the Saudi Hospital at Hajjah from April 1997 to May 1999. Hajjah Governorate is formed of tropical and mountainous regions with a population of more than 1.2 million. The above mentioned hospital is the main hospital in the governorate. There are 3 pediatric clinics covered by 3 Pediatricians. The pediatric age group in our hospital is considered as 12 years of age or less. The medical chart numbers were collected from the diagnosis logbook in the pediatric clinics for those stated to have *S.mansoni*, bloody stool or diarrhea. The following data were collected: age, sex, area of residency, clinical presentation, the number of previous *S.mansoni* infections, possible causes of bloody stool or diarrhea, number of hospital visits, and results of any radiological studies. The diagnosis of *S.mansoni* was confirmed by microscopic identification of the eggs in the fresh stool sample.

Results. There were 39,840 visits to the pediatric clinics, with 38,218 diagnostic episodes registered in the logbooks, 360 patients presenting with bloody stool or diarrhea. *Schistosoma mansoni* was found in 156 patients 43%, the most common identified cause of blood in the stool (Table 1). Older children 8-12 years formed 83% and the youngest was 2 years of age and males 79.5%. Only 4.5% were from outside Hajjah Governorate, the majority were from Hajjah town and the rest from the rural regions of Hajjah Governorate (Table 2). In addition to bloody stool or bloody diarrhea, abdominal pain was present in 23%. Previous history of *S.mansoni* infection was recorded in 19%. Approximately 90% had more than one visit to this hospital, 40.5% had ≥ 5 visits. In the same stool sample for diagnosing *S.mansoni*, other parasitic diseases were found in 20%. The total other parasitic diseases diagnosed in schistosoma and non-schistosoma patients are listed in Table 3. Hematuria was associated with *S.mansoni* in 28 patients (18%), 8 had terminal hematuria with negative urine analysis for *S.haemtobium* and 4 were positive. Ultrasound was carried out in 6 patients and one (17%) had periportal fibrosis with hepatosplenomegaly and portal hypertension.

Discussion. The study shows that even if empirical therapy composed of a combination of metronidazole and praziquantel, more than 40%, were not treated and if this is combined with a lack of follow-up it results in harmful sequelae. *Schistosoma mansoni* was the most common identified cause of bloody stool or diarrhea, indicating that *S.mansoni* is a major health problem in this Governorate.

Table 1 - Etiology of bloody stool in the studied patients.

Stool Analysis Findings	n of Patients (%)
<i>S.mansoni</i>	156 (43)
Amebiasis	14 (4)
<i>H.nana</i>	6 (2)
Ulcerative Colitis	3 (1)
Unknown	182 (50)
Total	360 (100)
S=Schistosoma, H.nana=hymenolepis nana, n=number	

Table 2 - Area of residency of the patients with *schistosomiasis mansoni*.

Area	n of Patients (%)
Hajjah Governorate:	
Hajjah Town	104 (67)
Mbyan	14 (9)
Kohlhan Afar	8 (5)
Others	23 (15)
Subtotal	149 (96)
Other Governorates	7 (4)
Grand Total	156 (100)
n=number	

Table 3 - Total parasitic infections among Schistosoma and non-schistosoma patients presented with bloody stool.

Parasite	n of Patients (%)
Ascaris	103 (29)
Giardia	82 (23)
Pinworms	41 (11.5)
Entameba histolytica	27 (7.5)
Hookworms	19 (5)
Trichuris Trichuri	6 (2)
Total	278 (78)
n=number	

Approximately 50% had no obvious cause for the bloody stool and this was due to: 1. Under utilization of both the stool culture and repeated stool examination. 2. No comments as to whether rectal examinations would show findings if carried out. 3. The lack of follow-up for further work-up if this problem persists, this was either patient related due to many factors, mainly socioeconomic status and lack of knowledge regarding seriousness; or physician-related that empirical therapy was provided with the assumption that one stool examination was not enough to rule out any parasitic infections in addition to an inadequate explanation regarding the importance of follow-up. On analyzing the schistosomiasis cases, the vast majority were older boys, similar to many other studies.^{16,18,19,22,23} This age group is characterized by high activity and less understanding of the seriousness of the diseases acquired from contaminated water. Females comprised one 5th of the total patients, which was not the same as another study carried out in Taiz with no sex differences.¹⁶ Two 3rds of our patients were from Hajjah town, which is an urban society where the females, including those in late childhood, had limited outdoor activities. The lower percentage of infestations in those from the rural areas could be explained by financial and transportation difficulties for reaching the hospital. Approximately one 5th experienced a previous *S.mansoni* infection indicating the endemicity of the disease and the deficiency in health education. Many of the patients had several hospital visits for other reasons showing that several other health problems existed which need work-up at different levels. One 5th of the positive samples for *S.mansoni* were also positive for other parasitic diseases and in a small number there were 3 different parasites simultaneously. Other parasitic diseases were also common in other samples from the schistosoma patients and also among those with negative for *S.mansoni*. Several other studies confirmed this association with *S.mansoni*.^{18,24,25,26} Simultaneous parasitic infection aggravates malnutrition and consequently aggravates the negative effect of the chronic parasitic infection.²⁷ Many nutritional problems improve with treatment of this parasitic disease.²⁸ Eighteen percent had hematuria, 4 of the non-terminal hematuria had *S.haemtobium*, 11 patients had terminal hematuria, those were of urinary tract origin but in the remaining, several renal causes can be added including glomerulonephritis caused by *S.mansoni*.¹³ Abdominal ultrasound was carried out in 6 patients and only one (17%) had periportal fibrosis, hepatosplenomegally and portal hypertension (hepatosplenic schistosomiasis) which has been found in childhood in different previous studies in variable frequencies.^{2,3,4} However, the number of patients who underwent ultrasound assessment in our

study was not enough to provide a solid figure for the prevalence of this complication.

In conclusion, *S.mansoni* is a major health problem in Hajjah Governorate. Older boys were the most at risk group. Patients in rural regions had difficulties in reaching the hospital indicated by their low percentage in this study compared to those from the urban area. The recommendations are: Mass therapy is required urgently. Long term comprehensive program is required for controlling this disease which can be achieved through an effective cooperation between many branches of the related ministries.

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