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Liver cirrhosis and splenomegaly associated with *Schistosoma mansoni* in a Sudanese woman in Malaysia: A case report

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ABSTRACT

We report a case of a patient with *Schistosoma mansoni* infection who presented with liver cirrhosis and splenomegaly. She was diagnosed by a serological test and Kato-Katz thick smear stool examination. The patient was a 52-year-old woman from Sudan who came to Malaysia for a week to visit her sons. The patient lives in the middle of Rabak region, Sudan, a highly endemic area for schistosomiasis where her daily routine includes rearing of cows and farming. The site of toilet and sources of drinking water are canals and wells; both infested with snails. Patient had a long history of exposure and coming into contact with water from these canals and wells.

1. Introduction

Schistosomiasis is an infection caused by blood flukes and remains an important health problem in many countries. It is endemic in tropical and subtropical countries mainly in Africa and the eastern Mediterranean region. Its incidence is rising in non-endemic countries due to immigrant populations and tourists[1]. The main disease-causing species are *Schistosoma haematobium* (*S. haematobium*), *Schistosoma mansoni* (*S. mansoni*), *Schistosoma japonicum* (*S. japonicum*), *Schistosoma mekongi* and *Schistosoma intercalatum*[2]. Schistosomiasis is a public health risk to those travelling to endemic areas within Asia and Africa who may be accidentally exposed to infection through contact with infective cercarial stage in rivers, lakes or canals[3]. In the case of *S. mansoni*

infection, the eggs are released in the faeces of infected individuals. The transmission cycle requires contamination of surface water by the excreta and presence of specific fresh water snails as intermediate host[4]. When the eggs come in contact with water, they hatch and miracidia are released. Miracidium penetrates freshwater snail of the genus *Biomphalaria* where it develops through various stages to become infective cercariae. The cercariae which are the larval form of the parasite then emerge from the snails mainly on exposure to light into the water[5]. Infection is usually acquired by humans through activities such as swimming, bathing, fishing, farming and washing clothes following skin penetration by the cercariae. The cercaria sheds its tail during skin penetration and the parasite is transformed into a schistosomula. Schistosomulae then develop to adults in the veins of liver and paired adult worms migrate from liver to the inferior mesenteric veins in the sigmoidorectal area where the female worm lays eggs. Eggs penetrate the gut wall to reach the colonic lumen and are passed in stool.

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2. Case report

On the 10th February 2014, a 52-year-old Sudanese woman was admitted to University Malaya Medical Centre (UMMC), Kuala Lumpur, Malaysia with a complaint of left hypochondrium pain a day prior to admission. She denied fever, jaundice, vomiting, bleeding tendency, diarrhea and dysuria. Systemic review was unremarkable. Her vital signs were normal. There were no stigmata of chronic liver disease and infective endocarditis. She was anicteric. She had no evidence of skin itching, fever or bloody stool. On abdominal examination, there was massive splenomegaly without signs of decompensated liver disease and portal hypertension and she was not in hepatic encephalopathy state. Her admission blood test showed pancytopenia. Abdominal ultrasound scan demonstrated appearances of liver cirrhosis with splenomegaly, gastric and splenic varices (Figure 1).

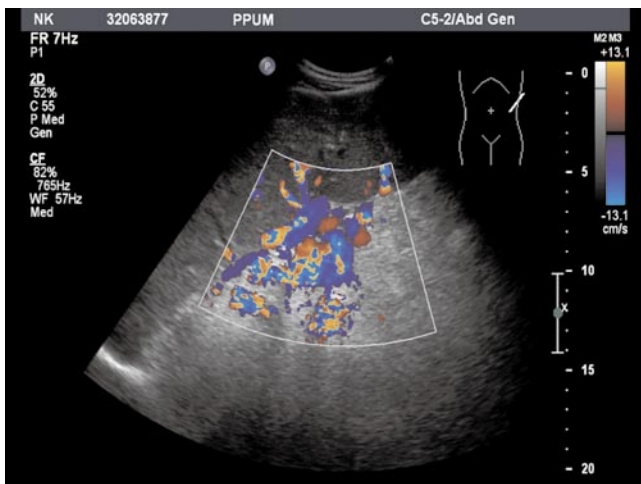


Figure 1. Abdominal ultrasound scan of patient demonstrated appearances of liver cirrhosis with splenomegaly, gastric and splenic varices.

On further questioning the patient said that she lives in Rabak region, Sudan, where her daily routine are cow rearing and farming. Her sources of drinking water are from canals and wells, where both are infested with snails. Sanitation is poor and canals are used as toilets. She said she had been exposed to the snail infested water for many years.

While in Sudan, the patient had a history of contracting malaria and was treated with intravenous artesunate. Viral screening for hepatitis B and C revealed negative results. Thick and thin blood films for malaria were negative for the current admission. On 14th February 2014, blood sample was obtained and was sent to the Parasitology Laboratory, Department of Parasitology, Faculty of Medicine, University of Malaya, Kuala Lumpur for serological tests to rule out leishmaniasis and schistosomiasis. Leishmaniasis was negative. However, the serological test by ELISA (Diagnostic Automation, USA) for schistosomiasis was positive. *S. mansoni* eggs were further detected in the stool by Kato-Katz thick smear stool examination

confirming the diagnosis of schistosomiasis (Figure 2). The egg of *S. mansoni* has a characteristic lateral spine which is not evident in this figure. Following the diagnosis, the patient was treated with praziquantel 40 mg/kg of body weight in a single dose and the patient progressed well. Stool examination after anthelmintic treatment was negative for *S. mansoni* eggs.



Figure 2. Egg of *S. mansoni* (120 μ m by 50 μ m in size).

Hatching and releasing of miracidium was observed in Kato-Katz preparation, lateral spine is not evident ($\times 400$ magnification).

3. Discussion

Schistosomiasis is a tropical disease and studies revealed that in 2011; at least 200 million patients were treated for schistosomiasis[2]. In highly endemic area of schistosomiasis, the prevalence of this disease can exceed 50% among the local populations, and high rates have been reported among short-term travelers and expatriates[6]. The diagnosis of schistosomiasis depends on the clinician's awareness of the infections as a possible differential diagnosis. It should be suspected particularly if there is any history of travel to an endemic area or immigrants from an endemic area[1]. Routine screening of patients following exposure to schistosomiasis consists of stool microscopy examination, full blood count, absolute eosinophil count and serology[3]. A definitive diagnosis can only be made with the presence of viable eggs in the stool, urine or biopsy specimen. Visualization of eggs in the stool for *S. mansoni* and *S. japonicum* and urine for *S. haematobium* is the most specific and sensitive method for the diagnosis of active schistosomiasis. Radiographic studies are useful for diagnosis as it gives specific information about the affected organs, degree of calcifications and the extent of lesions[7].

Acute schistosomiasis which is also known as Katayama syndrome is a systemic hypersensitivity reaction against migrating parasites or its eggs[3]. It has a broad range of clinical symptoms and signs that occur in different intensities in different patients[5]. The common symptoms of acute schistosomiasis are fever, cough, abdominal

pain and diarrhea especially in *S. mansoni* and *S. japonicum*[8,9]. The outcomes and clinical findings are due to egg deposition within the host tissues, histopathological changes and inflammatory response[1,2]. The adult parasite is able to survive for several years and the first symptoms can appear late which is up to 30 years after primary infection[9]. Schistosomiasis may cause various symptoms that it is not suspected as a cause of disease especially in non-immune person. The infection may persist in adults living in the endemic areas as chronic re-infection produces incomplete immunity[1,2].

S. mansoni causes intestinal schistosomiasis and is widely distributed in Africa, South America and the Caribbean Islands[9]. Infection in individuals suspected to have schistosomiasis caused by *S. mansoni* can be confirmed by the presence of viable *S. mansoni* eggs in the stool or eventually in the tissue[5]. In this study, *S. mansoni* was suspected based on 1) the patient is from Sudan, Africa, an endemic area for *S. mansoni*, 2) serological test is positive for schistosomiasis, 3) stool microscopy showed eggs of *S. mansoni* which hatched under the microscope light and 4) a history of exposure to contaminated water. This patient presented with a chronic form of the disease. Ultrasound scan of her abdomen showed liver cirrhosis with splenomegaly, gastric and splenic varices. Infection with *S. mansoni* can lead to hepatic schistosomiasis and eventually portal hypertension. In *S. mansoni* infections, the majority of patients exhibit granuloma formation around eggs in the liver and fibrosis of small portal tracts. Cirrhosis is very commonly seen in Egyptian patients with this disease[6]. Evidence of portal hypertension with splenomegaly, gastric and splenic varices is also seen in this patient. Pancytopenia which is present in this patient is due to chronic and advanced schistosomiasis. Praziquantel is the prescribed drug for treatment of *S. mansoni* infection. Assessment of treatment efficacy can be done by monitoring the presence of eggs in the stool samples every 24-hour after the treatment has been given[7]. All cases of schistosomiasis should be treated because the adult parasite can live in the human host for years[9].

The number of schistosomiasis cases continues to increase to new geographical areas due to environmental changes that result from the development of water resources and the growth of population migration which can aid the spread of schistosomiasis. It is relatively associated with agricultural and it is a typical disease among the poor who live in unhygienic conditions which favour the transmission of schistosomiasis[6]. Though schistosomiasis is the second most common infectious disease worldwide after malaria[4], it is relatively rare in Malaysia. The snail intermediate host for *S. mansoni* of the genus *Biomphalaria* is not reported in Malaysia. As Malaysia is not an endemic country for schistosomiasis, a conscientious medical history is necessary to arrive at a differential diagnosis especially in immigrants from schistosomiasis endemic areas. In conclusion,

the prevalence of schistosomiasis is changing rapidly. Population movements have led to introduction of schistosomiasis into countries that have not been endemic for the disease. Therefore increased awareness of schistosomiasis among clinicians can result in prompt diagnosis and treatment.

Conflict of interest statement

We declare that we have no conflict of interest.

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