



International Journal of Allied Medical Sciences and Clinical Research (IJAMSCR)

IJAMSCR | Volume 3 | Issue 3 | July-Sep- 2015
www.ijamscr.com

ISSN: 2347-6567

Case Report

Medical research

Schistosoma in prostate- A case report

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ABSTRACT

Schistosomiasis is prevalent in tropical and sub-tropical areas, especially in poor communities without access to safe drinking water and adequate sanitation. There are two major forms of schistosomiasis – intestinal and urogenital – caused by five main species of blood fluke. Genital involvement has been described to occur in infection with all species of *Schistosoma*, but it is particularly frequent in *S. haematobium* infection. *Schistosoma* infestation has been particularly endemic in Africa and Middle East however, significant change in its geographical distribution has been observed in recent years. Advancement in health and hygiene as well as snail control measures and chemotherapy has eliminated the threat from several endemic countries. On the contrary, population movement from endemic zones and expansion of natural habitat of snail associated with unplanned establishment of dam and irrigation projects has resulted in emergence of newer endemic foci. Here we report a case of *Schistosoma haematobium* in prostate of a 65 year old male patient, presented with swelling over left inguinal region and unable to pass urine. Clinically, diagnosed as grade II prostatomegaly with left inguinal hernia. Ultrasonography shows prostatomegaly with right sided hydronephrosis. Studies have associated schistosomiasis with malignant neoplasia. In the reviewed literature, only few cases of co-occurrence of adenocarcinoma of the prostate and *S. haematobium* have been reported.

KEYWORDS: - Schistosoma, Endemic areas.

INTRODUCTION

Schistosomiasis is an acute and chronic disease caused by parasitic worms. Schistosomiasis, originally known as Bilharziasis (or Bilharsiosis) is a parasitic disease caused by the platyhelminth worm of the class Trematoda, genus *Schistosoma* (commonly known as blood-flukes and bilharzia) and is relatively common in developing

countries, especially on the continent of Africa and in central rural zones of Egypt and China.^[1] People are infected during routine agricultural, domestic, occupational and recreational activities which expose them to infested water. Transmission occurs when people suffering from schistosomiasis contaminate freshwater sources with their excreta containing parasite eggs which

hatch in water and larval forms of the parasite – released by freshwater snails – penetrate the skin during contact with infested water. In the body, the larvae develop into adult schistosomes. Adult worms live in the blood vessels where the females release eggs. Some of the eggs are passed out of the body in the faeces or urine to continue the parasite’s life-cycle. Others become trapped in body tissues, causing immune reactions and progressive damage to organs. [2] Schistosomes display considerable biodiversity in habitat, host range, and epidemiology globally. In spite of the noticeable presence of sero-positivity for schistosomal antibody and passage of schistosome eggs in human faeces, Indian subcontinent has always been considered as a low risk region for human schistosomiasis. Several species has been described in India which may have association with human infection and cercarial rash[3]. Migration to urban areas and population movements are introducing the disease to new areas. Increasing population size and the corresponding needs for power and water often result in development schemes, and environmental modifications

facilitate transmission. With the rise in eco-tourism and travel “off the beaten track”, increasing numbers of tourists are contracting schistosomiasis.[2]

CASE REPORT

A 65 year old male patient presented to our hospital with clinical complaints of swelling over left inguinal region and unable to pass urine. He denied any history of haematuria. Rectal examination revealed enlarged prostate. His prostate specific antigen was under normal range(0.16 ng/ml). Ultrasound showed prostatomegaly with right sided hydronephrosis. Haemoglobin and blood urea were 9.3 gm/dl and 66.0mg/dl respectively. Urine examination revealed occasional red blood cells and 10-15 pus cells per high power field. Transurethral resection of prostate with left inguinal hernioplasty was done. Grossly many greyish white fragments of tissue were received. Histopathological sections revealed very few acini lined by inner cuboidal to columnar epithelium and outer basal layer [Fig.1].

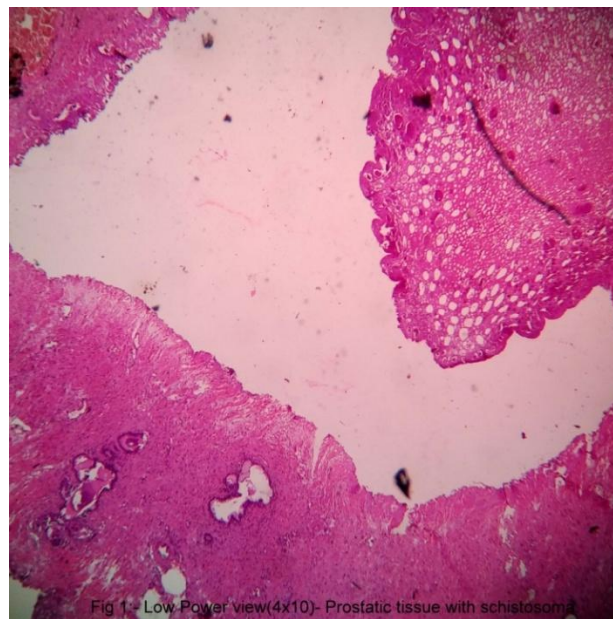


Fig 1 - Low Power view(4x10)- Prostatic tissue with schistosome

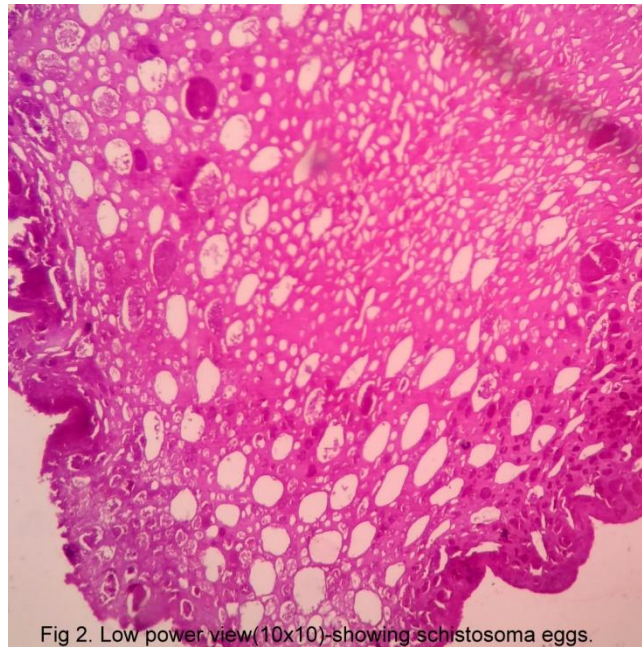


Fig 2. Low power view(10x10)-showing schistosoma eggs.

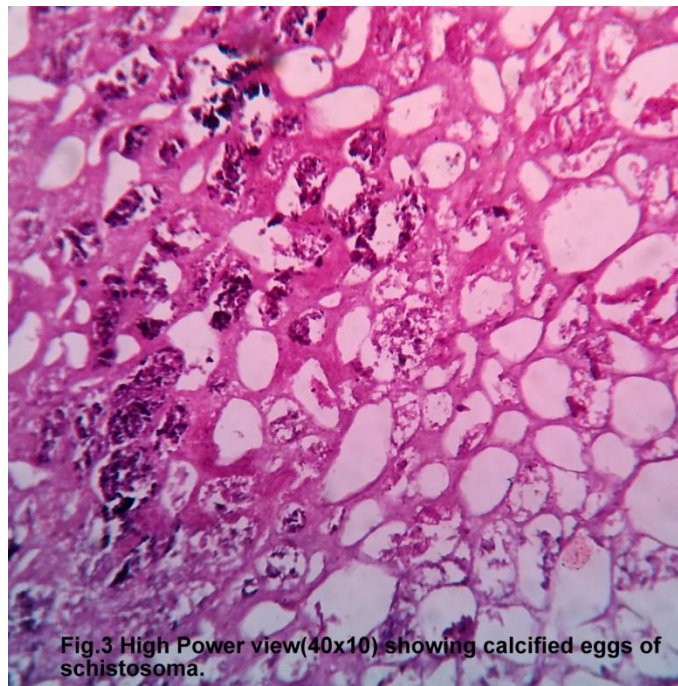


Fig.3 High Power view(40x10) showing calcified eggs of schistosoma.

Surrounding fibromuscular stroma was comparatively cellular with mild inflammatory infiltrate composed of mostly lymphocytes and occasional eosinophils. Other fragments revealed eggs of schistosoma haematobium [Fig.2,3]. So, final diagnosis was given as, benign hyperplasia of prostate with schistosoma haematobium infestation.

DISCUSSION

Schistosomiasis, also known as bilharziasis or snail fever is a waterborne parasitic infection that damages internal organs. Although their location is in the blood vessels, most of the pathologic changes are produced by eggs deposited in the tissues of the intestine, urinary bladder, prostate and other organs.

^[1] Genital involvement has been described to occur in infection with all species of *Schistosoma*, but it is particularly frequent in *S. haematobium* infection. ^[4]

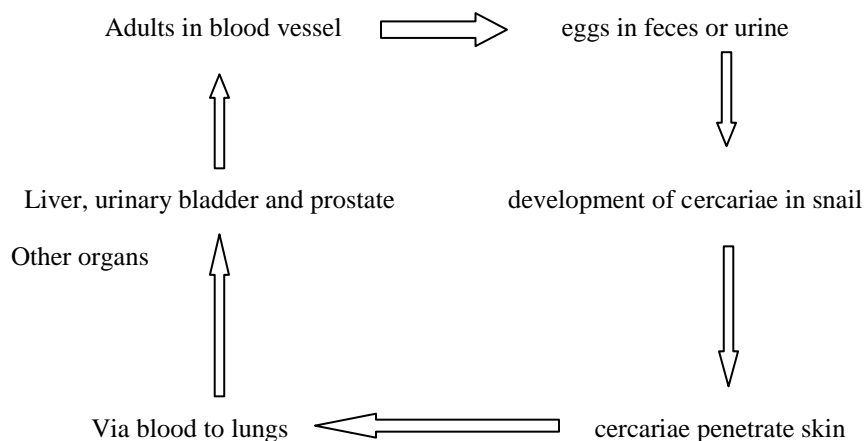
There are two major forms of schistosomiasis – intestinal and urogenital – caused by five main species of blood fluke (see table) ^[2].

Table: 1 Parasite species and geographical distribution of schistosomiasis

	Species	Geographical distribution
Intestinal schistosomiasis	<i>Schistosoma mansoni</i>	Africa, the Middle East, the Caribbean, Brazil, Venezuela and Suriname
	<i>Schistosoma japonicum</i>	China, Indonesia, the Philippines
	<i>Schistosoma mekongi</i>	Several districts of Cambodia and the Lao People's Democratic Republic
	<i>Schistosoma guineensis</i> and related <i>S. Intercalatum</i>	Rain forest areas of central Africa
Urogenital schistosomiasis	<i>Schistosoma haematobium</i>	Africa, the Middle East

Of the 16 species of schistosomes known to infest man or animals, the 5 principal ones that infect man fall into three groups that are characterized by the type of egg produced:(a) eggs with lateral spine e.g. *S.mansoni*; (b) eggs with a terminal spine e.g. *S haematobium* and *S.intercalatum*; (c) eggs that are

round and minutely spined e.g. *S. japonicum* and *S.mekongi*. Urinary form is caused by *S. haematobium* and intestinal form by *S.mansoni*, *S.japonicum* and *S.mekongi*. *S.intercalatum* causes a form of rectal schistosomiasis. ^[5] The life cycle of the four species of schistosomes are similar.



The adults of *S. haematobium* tend to deposit their eggs in the wall of the urinary bladder or, to a lesser extent, in the uterus, vaginal wall and prostate gland.

^[1] The immunological responses against miracidial soluble antigens lead to chronic cystitis associated with hyperplasia of the bladder mucosa, squamous metaplasia and the resulting association of urinary schistosomiasis with bladder cancer is well established.^[6] Similar pathogenesis leads to adenocarcinoma of prostate. Our case shows presence of schistosomia with benign hyperplasia of prostate. There was no evidence of prostate

intraepithelial lesion or adenocarcinoma. In endemic areas, infections with *Schistosoma* species start at an early age, and severe manifestations of the disease are observed at adult ages. It is possible that prostate tumors begin at early ages of the patients, at the time when schistosomiasis infections tend to occur in endemic areas. The status of human schistosomiasis in India is not well established. India has always been considered as a non-endemic country for human schistosomiasis. The first case of human schistosomiasis in India was reported by Hatch. Wardrop reported 5 cases of which 2 were

indigenous. The non-existence of intermediate host of anthropophilic schistosomes in India is believed to be the principal reason which precludes the natural lifecycle of these schistosomes in Indian subcontinent. Maharashtra state holds an important place in history of schistosomiasis in India. In middle of twentieth century, the discovery of endemic focus of human schistosomiasis was a breakthrough in schistosomiasis research in India. The pioneer work of Gadgil and Shah established the epidemiology and lifecycle of *Schistosoma spp* of Gimvi. A resurvey in 1958 showed decrease in overall incidence of infection in Gimvi. In addition to this, two endemic foci of human schistosomiasis were discovered from Madras (Tirupparankundaram village, Madurai district) and Madhya Pradesh (Lahager village, Raipur district). However, with the elimination of foci of schistosomal infection, the number of human infection reduced significantly. [1] On the other hand, the causal relationship between prostate cancer and schistosomiasis remains a matter of debate. It has been proposed that glandular atrophy associated with focal fibrosis of the prostate may lead to precancerous hyperplasia. Other authors have suggested that the presence of nitrosamine carcinogens produced by nitrate-reducing bacteria and the enzyme beta-glucuronidase tend to act as cofactors for inducing neoplasia. [6] Only 8 cases of prostatic schistosomiasis associated with adenocarcinoma of the prostate have been reported 3

of which were associated with *S. haematobium*, 3 with *S. mansoni* and in 2 cases the species of parasite was not specified.

CONCLUSION

The status of human schistosomiasis has been an issue of great controversy. Most countries situated within the same parallel belt of longitude as India has human schistosomiasis in endemic form. The absence of snails of *Bulinus* sp and resistance of common snails to miracidia of human schistosomes are implicated as the main reason of relative absence of human schistosomiasis in India. However, the discovery of endemic foci and sporadic cases of human infection indicate toward the possibility that indigenous snails may serve as an alternate intermediate host of human schistosome. Several unique schistosome species of animals are prevalent in India. The co-existence of several different species of schistosomes may result in newer hybrid strains pathogenic to man and the risk associated with these species as a potential source of human infection needs further research. The case was studied because of the causal relationship between adenocarcinoma of the prostate gland and schistosomiasis and rarity of such cases in non-endemic areas. In endemic areas, schistosomiasis should be considered as differential diagnosis for prostate gland enlargement. Further investigation is recommended on the possible causal relationship between the diseases in endemic areas.

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How to cite this article: Ruchi Sharma, Sadhana D Mahore, Hrushikesh Kolhe, Revati Patil, Kalpana Bothale, Anne Wilkinson, Schistosoma in prostate- A case report. Int J of Allied Med Sci and Clin Res 2015; 3(3):293-297.

Source of Support: Nil. **Conflict of Interest:** None declared.