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Full Length Research Paper

Detection Rate of Urinary Schistosomiasis in El khiar Villages White Nile State, Sudan

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Abstract

Background: Urinary schistosomasis also known as Bilharziasis, is a parasitic disease caused by a digenetic blood fluke of the genus schistosoma. Schistosomasis is the second most prevalent neglected tropical disease after hookworm and becomes an important public health problem especially in the Sub–Saharan Africa. The disease associated with urinary tract infection. The study was used to detect the rate of Schistosoma haematobium infection among children in El khiar villages. Method: Sedimentation method was used to identify Schistosoma haematobium ova and filtration method to count the number of eggs /10ml of urine. Result Out of the 3oo sample 224 males and 76 females 38 (12.6 %) were infected with Schistosoma haematobium, in which males had rate of 10.3 % compared to 2.3% among females .The study showed that Schistosoma haematobium infection rate was significantly higher in males than females. P (0.054) the odds ratio was 1.583 (95% confidence interval = 0.667 -3.760). The rate of schistosoma haematobium infection among children in relation to age showed that ages11- 13 years had the highest rate 5 % .also there was a significant different in the rate of infection in El khiar villages. Schistosoma haematobium infection among children has strong association with hematuria. Conclusion: Schistosoma haematobium infection rate over all El khiar villages of 12.6%. The rate of infection higher in males 10.3% than females 2.3%.

Keywords: Infection, children, urinary, villages.

INTRODUCTION

Schistosomiasis is the second of all parasitic infections of man. The World Health Organization (WHO) estimated that schistosomiasis and soil transmitted helminthes represent more than 40% of the global disease burden caused by all tropical diseases, excluding malaria (WHO). In the Sudan, especially in Gezira Agricultural Irrigation in Sudan, the first case of the disease was reported by Balfour, 1904, who found 17% of the children in Khartoum Primary School suffering from urinary schistosomiasis.

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Since 1919, the disease has seen discovered in the northern part of the country. The pathogenic effects of the disease include chronic diarrhea, hepatosplenomegaly, liver fibrosis, hemorrhage and ulceration of genital organ. Schistosomiasis of the urethral tract lead to the destruction of the mucosal cells of some of the reproductive organ. Poor health induced by schistosomiasis can lead to lower incomes, impaired childhood growth, cognitive development and reduced productive capacity. Long term infections can lead to severe damage to human body and sometime be deadly, Kabatereine *et al.,* 2006. Female genital Schistosomiasis is a major social and medical problem that may facilitate the spread of some sexually transmitted disease such as HIV. Urinary schistosomiasis lead to the renal failure,

the release eggs travel to wall of urine bladder causing hematuria

Fibrosis of Bladder and it becomes calcified; also there is increased pressure on ureters and kidney known as hydronephrosis and development of squamous cell which lead to carcinoma of the bladder, Wahab *et al.,* 1992. Schistosomasis in pregnancy caused Anemia and low birth weight, Friedman *et al.,* 2007 Schistosoma haematobium can infect the brain or Spinal cord. The World Health Organization (WHO) has recently recommended that disease caused by S. haematobium should be called urogenital schistosomasis

MATERIAL AND METHODS

Study area

This cross-sectional study was carried out in El khiar villages which include Eldobasi, Elsaial and El homran near to each other of White Nile state, eastern Dewim city and it is 250 Km from Khartoum. Run canals between them which act as suitable condition for living and multiplication of the intermediate host. The canals carry the water from different direction to flow in the sea that provides water for swimming, washing and pathing, 60% of population is poor and most of them work of fishing.

Sample Size and Sampling Technique

Total of 300 children their ages were 5 to 16 year used for this study, by stratified randomly method.

Collection of Urine Samples

Urine samples used for this study` were collected from 300 children in El khiar villages from 10;00 am to 2;00 pm daily from November to December 2016 ,the specimens consist of single terminal urine of 10 ml, after exercise to pass more number of eggs. Children were given cleaned bottles and instructed on how to provide urine for the study. The specimens were labeled, place in cold ice parked box then taken to laboratory for analysis.

Laboratory Examination

The sedimentation method was used by centrifugation of 10 ml of the urine sample at 5000rpm for 5 minutes. These dement examined microscopically using x 40 objective to identify Schistosoma haematobium ova which is characterized by the presence of terminal spine. Eggs were counted and record as eggs/10ml of urine.

Data collection and measurement

By using questionnaires to detect information of environmental, water contact, history of infection and treatment of Schistosoma haematobium.

Data Analysis

By using SPSS computer software program to compile data from into specially develop program chi–square were used to detect the rate of urinary schistosomasis infection among children in 3 villages.

Ethical Issues

Before start of study, ethical clearance was obtained from populations under permission of local government and parent of children. All infected children had been treated.

RESULTS

Out of 300 children in 3 villages constituting 224 males and 76 females who participated in the study, 38 were infected with Schistosoma haematobium infection and the rate of 12.6% in which males had rate 10.3% compared to 2.3% among females (Table 1). There was significant difference ($P > 0.05$) in Schistosoma haematobium infection between males and females among children. The rate of Schistosoma haematobium infection in 3 villages among children in relation to age (Table 2) showed that ages 11-13 years had the highest rate 5% and the ages 5-7 years had the least 1.7%. The statistical analysis revealed a significant difference ($P> 0.05$) in Schistosoma haematobium infection among children in 3 villages and strong association between schistosoma haematobium infection and hematuria (Table 3).

DISCUSSION

In the present study, there was no intestinal schistosomiasis (S. mansoni) detected among the examined subjects. However, urinary schistosomiasis (S. haematobium) was detected in the three study sites with a higher prevalence and intensity of infection among the population in the village. In the present study, the prevalence of S.haematobium infection among males was significantly higher than that of females. This finding agrees with many previous studies in endemic areas, Salim 1996.

Due to difference in behavior that affects the rate of contact with cercariae infested water, the detection rate and intensity of S.haematobium infection is expected to vary with age and sex. Studies documented an increased prevalence of S.haematobium infection and mean egg count with an increase in the age of children and in males than in females. We have demonstrated that children

Table 1. The positive and negative rate of infection according to the gender

Gender	NO. Sample	NO. Infected with S.H	Percentage
Male	224	31	10.3%
Female	76	7	2.3%
Total	300	38	12.7%
P-value	Odd ratio	Lower	Upper
0.054	1.583	0.667	3.760

Table 2. The positive and negative rate of infection according to the age group

Age (years)	NO. Sample	NO. Infected with S.h	Percentage
5-7	42	5	1.7%
8-10	93	11	3.7%
11-13	117	15	5.0%
14-16	48	7	2.3%
Total	300	38	12.7%
P-value	0.633		

Table 3. Association between Schistosoma haematobium infection and haematuria among three different villages

Area	NO. Sample	NO. Infected with S.H	Percentage	NO. with Haematuria	Percentage
El dobesi	100	19	6.3.0%	17	5.7%
El saial	100	13	4.3.0%	15	5.0%
El homran	100	6	(2.0%)	3	1.0%
Total	300	38	12.7%	35	11.7%
P-value	0.022				

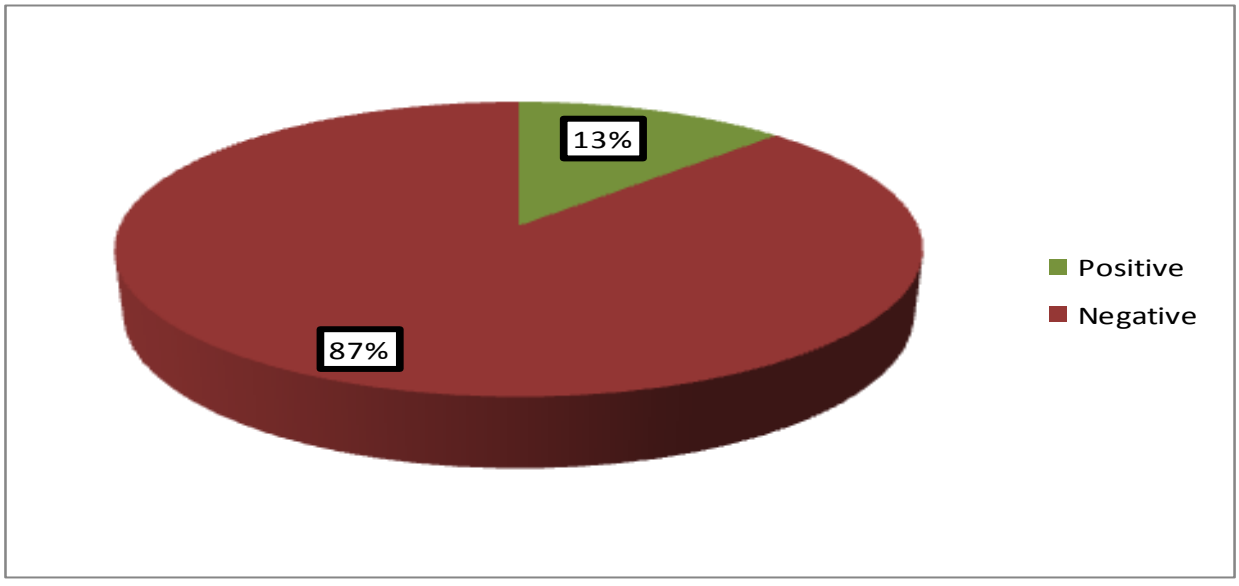

Figure 1. Shows percentage of *S. haematobium* infection among study population

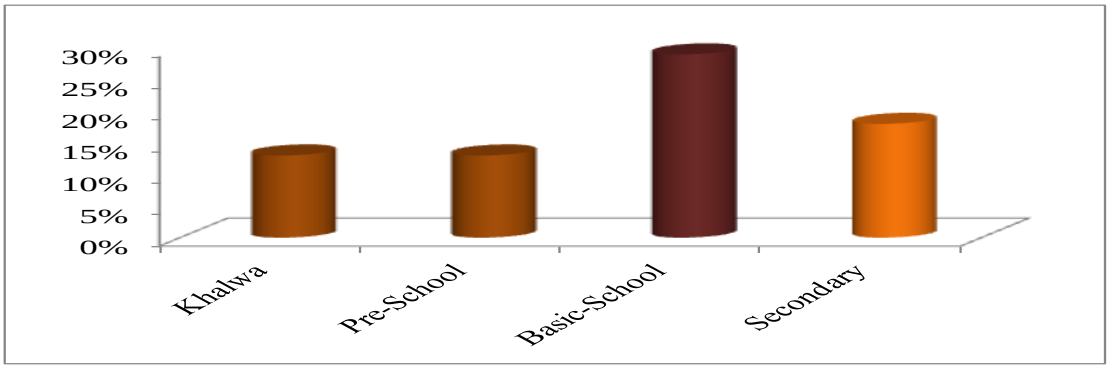

Figure 2. Shows percentage distribution of Schistosoma haematobium infection according to the educational levels

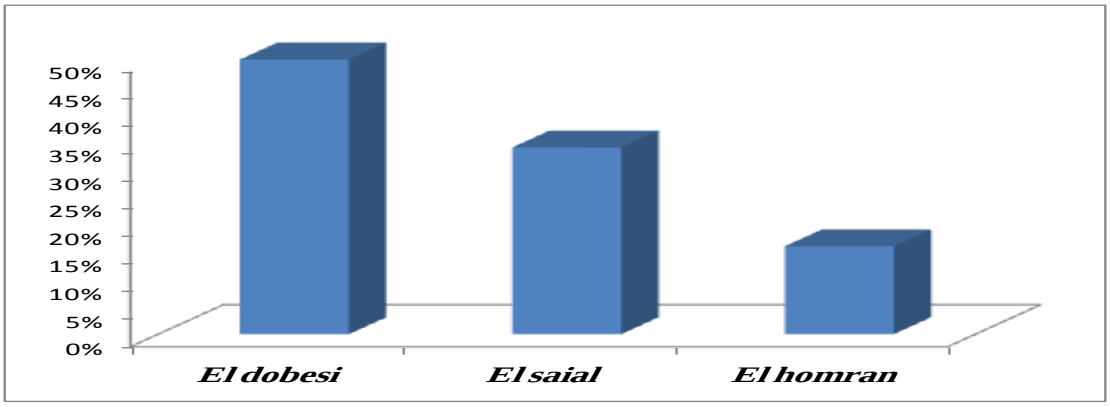

Figure 3. Shows percentage distribution of Schistosoma haematobium infection among the three villages

with anemia or children with more severe microhematuria scores at baseline had higher S. haematobium infection intensities which suggests that heavy intensities of S. haematobium infection can be associated with anemia and hematuria. Which, as demonstrated previously, Prual *et al.,* 1992.

CONCLUSION

The canals water distributed along three areas act as the main source of infection which used in washing, swimming, fishing and damping of the human waste. Health services in study areas are.

RECOMMENDATION

Based on the finding of our study, it is recommended that; control program should work on health education, about how people to pass urine away from any source of water. State government must be provided all village with health water especially that it is far away from cities to reduce the rate of infection. Kahlua student or other person come from endemic areas to other areas urine samples should be examined to stop transmission of the disease. Applying intensive educational program to the population in the area revealing subsequently the hazard of contact with infected water.

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