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RESEARCH ARTICLE

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Co-infection of urinary schistosomiasis and haematuria

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ABSTRACT

A study was carried out to determine the prevalence of urinary Schistosomiasis among resident of Wasai Dam in Minjibir Local Government area, Kano State, Nigeria and to relate haematuria with urinary Schistosomiasis. A total of 402 people in four selected villages residing around the were screened for the present or absence of S. haematobium ova. Eggs of S. haematobium were examined using urine concentration sedimentation technique. The overall prevalence of the infection was 61.4% and Mean Eggs Per cubic Centilitre (EPC) of 31.8%. Males were slightly more infected (67.9%) than females (54.8%). People with haematuria had highest prevalence (88.8%) of S. haematobium infection than people without haematuria that have (34.0%). There was significant difference (P < 0.05) between prevalence of the infection and people with haematuria.

Keywords: Schistosomiasis, Infection, Haematuria, Minjibir, Wasai Dam, Kano-Nigeria.

INTRODUCTION

Schistosomiasis is one of the major tropical parasitic diseases caused by the trematode of the genus Schistosoma. It is the second most prevalent tropical disease and a leading cause of severe morbidity[1]. It is estimated that Schistosomiasis is endemic in 74 countries worldwide. More than 200 million people are currently infected globally [2]. In Nigeria Schistosomiasis occur in all the 36 state of the country including the Federal Capital Territory [3]. The country has the prevalence of *Schistosomahaematobium* as high as 86% while the prevalence of *Schistosomamansoni* infection is low [4].

S. haematobium is almost exclusively a parasite of man and is transmitted by snail intermediate host of the*Bulinus specie*.Mature worms use live in the vesicle veins of the urinary tract and female deposit eggs in the walls of the urinary bladder, ureters and urethra. Much of the eggs are passed into the urine while some of the eggs are carried to the liver and sometimes to the viscera; leading to fibrosis. Schistosome eggs that are not passed to the bladder, ureter and kidney undergo some reactions. Bladder cancer is common in advanced case [5]. Unlike most flukes Schistosome do not develop great number of eggs at once; but gradually and have only a few in the oviduct at any one time[6].Schistosomes live for many years. The present study was aimed at estimating the prevalence of Schistosomes in the study area with a view to determine relationship between haematuria and prevalence of *S. haematobium* infection.

MATERIALS AND METHODS

Study Area

The study was carried out between October, 2010 and January, 2012 at four villages of Minjibir Local Government area of Kano State, namely Wasai, Kazawa, Farawa and Koya. The sites were selected because they are closer to

Wasai Dam, which support water snail intermediate host for *S. haematobium* and *S. mansoni*[7]. Minjibir Local Government area is located on a rock which is made of unconsolidated sediments of the Chad formation in the North Eastern part of Kano State. The global location of the area is 12^{o} 10' 42'' N and 8^{o} 39' 33'' E. The elevation of the region is about 400-700m above sea level. The vegetation of the area can be described as Sudan Savannah type. The climate of the region is tropic, wet and dry type. In a normal year, the mean annual rainfall is about 600mm, although no consecutive years record the same amount of rain fall. The area has a total population of 213, 792 [8]. The Dam provides water for irrigation and fish production. Wells are the common source of water for domestic activity in the area. The Wells are about one meter in diameter and 15-29m deep. Boreholes are not common. The major occupation of the villagers is farming and fishing. Pit latrines are available in most of the houses [7].

Study Population

A total of 402 subjects were screened for the presence or absence of urinary Schistosomiasis in all the selected villages. The subjects are adult and children of both sexes. The purpose of study was carefully explained to the subject. Following their written informed consent, subjects were asked to provide urine sample between 10.00 - 12.00 pm for examination [9]. Urine sample was collected along with personal data that consist of name, sex and address of each subject. People who refuse to participate or unable to produce specimen were not included in the analysis.

Procedure for Urine Examination

Quantitative examination of single urine specimen was done using modified concentration sedimentation technique for the detection of eggs of *S. haematobium*[9,10,11]. The subjects were given specimen bottle for sample collection. The urine sample was preserved with three drop of Hypochlorite and later transported to Postgraduate Research Laboratory, Department of Biological Sciences, Bayero University Kano, for the detection of eggs.

Ten millilitres of the collected urine specimen was placed into a centrifuge machine for centrifugation; RCF = 44.72g. The supernatant was discarded and a drop of the sediment was placed on the glass slide and covered with cover slip. It was then examined microscopically using low power time (×10) objective lens .The numbers of eggs in the preparation were counted and recorded. The intensity of infection was expressed as Mean Eggs per Centilitre (Mean EPC). From 0-20 eggs count was considered to be low infection. 21-49 was considered to be moderate infection and 49 and above was considered to be severe infection.

Statistical Analysis

Chisquare (X^2) test was used to determine association between variables (prevalence, mean EPC, sex andhaematuria) and their degree of significance at $p<0.05$ level of probability, using Open EPI Version 2.2.1.

RESULTS

Four hundred and two people were screened in all the four villages of the study area. Three hundred and ninety one (92.3) were males and 31 (7.7%) were females. Detail of the sex structure of the study population was shown in Table 1.Table 2 shows prevalence and mean EPC in relation to sex of the study population. The prevalence of the infection in males was 67.9%, with mean EPC of 57.2, while the prevalence in females was 54.8%, with mean EPC of 6.4 .The overall prevalence of the infection in the study area was 61.4%, with overall Mean EPC of 31.8. Table 3 shows relationship between haematuria and prevalence of *S. haematobium* infection in the study area. One hundred and seventy nine were screened for haematuria, out of this number 88.8% were infected with mean EPC of 43.7, while 223 people that have no haematuriashows 34.0% prevalence and mean EPC of 19.8. There was no significant difference between prevalence of infection and people with haematuria ($p>0.05$).

Table1: Sex Structure of the Study Population

Sex	Wasai	Kazawa	Farawa	Koya	Overall
Male	120(98.89)	79(94)	83(83.8)	89(93.7)	371(92. 3)
Female	4(3.2)	5(6)	16(16.2)	6(6.3)	31(7.7)
Total	124	84	99	95	402

Values in parenthesis ( ) are percentages

Table 2: Prevalence and Mean EPC of Infection in Relation to Sex of the Study Population

Sex	Number examined	Number infected	Prevalence (%)	Mean EPC
Male	371	252	67.9	57.2
Female	31	17	54.8	6.4
Overall	402	269	61.4	31.8

Table 3: Prevalence of haematuria and mean EPC of *S. haematobium* infection in the study area

Status of haematuria	No. Examined	No. Infected	Prevalence (%)	Mean EPC
Present	179	159	88.8	43.7
Absent	223	76	34.0	19.8
Overall	402	235	61.4	31.8

At 0.05 level of probability, it was observed that prevalence of the infection in relation to haematuria as well as haematuria verses infection was found to be significant.

DISCUSSION

The prevalence of *S. haematobium* infection in the study area was found to be 61.4% and mean EPC of 31.8%, indicating a high prevalence. This could be as a result of high water contact activities by the people in the area due to farming and fishing. The prevalence in the present study was slightly higher than that reported by [12] who worked on pupil in some part of the study area and reported 44.2% prevalence and mean EPC of 99.0; the mean EPC is much higher than the present study because they are probably children that have high water contact activities; this predisposes them to high risk of transmission. Prevalence and mean intensity of *S. haematobium* infection in Zuru emirate of Kebbi State was 66.2% and 8.0% eggs/10 ml urine [13]. This value is almost similar to the values obtained in the present study, though the intensity is much lower than the present study.

The prevalence of *S. haematobium* infection was found to be slightly higher in males 67.9% than females 54.8%. This finding might be because males are more exposed to infected water as a result of their contact activities. This assertion is in agreement with the work of [14] in Yobe State as well as [15] in Malumfashi. This implies that *S. haematobium* is not gender specific disease, but rather occur as a result of exposure to contaminated water. The intensity of the infection shows that males had highest mean EPC, which is in conformity with the work of [13] who reported 67.13% prevalence in males and 21.0% prevalence in prevalence in females.Males had the highest mean eggs count (5.04) eggs/10 ml urine than females (2.54 eggs/10ml urine).

People with haematuria have high prevalence and mean EPC of *S. haematobium* infection when compared with those that do not have haematuria. There is strong relationship between haematuria, prevalence and mean EPC. Haematuria detected in this study was 88.8%. This value was found to be slightly lower than the value reported by [16]. Who reported 92.3% among those with haematuria.[17] associated haematuria with active Schistosome lesion in children. The failure to find the cause of *S. haematobium*infection in such insignificant number (5.0%) suggests other cause of blood in urinesuch us menstruation, urinary tract infection, haemorrhoid, glomerular nephritis or circumcision [18].

CONCLUSION

This study shows strong relationship between prevalence, haematuria and mean EPC in the study area. Therefore mass social mobilization and chemotherapy should be promoted in that area.

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