

## **S. HAEMATOBIIUM INFECTION AMONG THE POPULATION OF SHARAG-ALNEEL VILLAGES IN KHARTOUM STATE, SUDAN AND ITS ASSOCIATION WITH BACTERURIA**

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### **ABSTRACT**

Urinary Schistosomiasis is a disease caused by blood fluke parasite *Schistosoma haematobium*. Bacteriuria are easily recovered from the blood and they have been isolated from the urine. The objective of this study to determine the prevalence of *Schistosoma haematobium* and associated bacteriuria in Khartoum state Sharag-Alneel villages. A descriptive cross sectional study was conducted from April to May 2015. 120 urine samples were collected from villagers, screened for *Schistosoma haematobium* and Chromogenic urine agar is an improved diagnostic medium for associated bacteriuria. 19.2% were found to be positive for egg of *Schistosoma haematobium*, associated bacterial growth were 86.9% of positive urinary Schistosomiasis and the most common micro organism was found to be is *staphylococcus aureus*.

### **INTRODUCTION**

Urinary Schistosomiasis is a disease caused by blood fluke parasite *Schistosoma haematobium* and transmitted by a fresh water snails bulinus. are easily recovered from the blood and they have been isolated from the urine.[1,2]the prevalence of urinary schistosomiasis and concomitant urinary tract pathogens among 1600 pupils. Their study revealed that 920 (57.5%) who had the ova of *Schistosoma haematobium* also had pyuria; 75.4% of which had concomitant bacteriuria. The bacteriuria isolated included *Klebsiella spp*; *staphylococcus aureus* with *Escherichia coli* occurring more frequently than the rest. [3] reported that the prevalence of bacteriuria was 88.4 % in *S. haematobium* infected individuals. Their major isolates were *Escherichia coli* in 20.5% of the cases, *Salmonella spp* in 16.1% and *staphylococcus aureus* in 16.1 % of the cases. [4] showed that bacteriuria and bacterial isolates occurred among 60 (30.3%) with *S. haematobium* infection.

They reported three nitrate reducing bacterial isolates namely; *Klebsiella spp.*, *staphylococcus aureus* and *Escherichia coli*. [5] reported a significant bacteriuria in 2 (0.9 %) cases out of 226 children with urinary schistosomiasis and in 4(1.8 %) of the 217 children without urinary schistosomiasis [6].

### **METHODS**

#### **Study design, area and period:**

A descriptive cross sectional study was conducted from April to May 2015in Khartoum Sharag-Alneel villages.

#### **Sample size and sampling techniques:**

120 urine samples were collected from villagers population.

#### **Urine collection and analysis:**

Mid stream urine specimens were collected aseptically as possible, in a sterile wide mouth container. Each individual was asked to do some exercise before taking the urine specimen. Since urine itself is a good culture medium, all specimens were processed by the laboratory within 2 hours of collection, kept refrigerated at

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4° C until delivery to the laboratory and were processed no longer than 4 hours after collection. Whenever possible, urine specimens for culture were collected in the morning. [7]

**Diagnosis of *S. haematobium***

**Sedimentation method (centrifugation technique):**

Diagnosis of urinary schistosomiasis was conducted using the centrifugation concentration technique. 10 ml of the urine sample were centrifuged at 2000 r.p.m for 5 minutes, and the sediment were then examined for each individual under the low power of the microscope (10x). [8]

**Isolation and identification of bacteria**

**Chromogenic urine agar:**

Chromogenic urine agar is an improved diagnostic medium useful for the isolation, counting and direct presumptive rapid identification of urinary tract pathogens: *Escherichia coli*(pink), *Klebsiella*species (green blue), *Proteus*(brown), *Enterococcus faecalis*(green-turquoise), *Staphylococcus aureus* (creamy white). The differentiation between the different bacterial species is achieved by:

- A chromogenic substrate for β-galactosidase (GAL) which is split with the liberation of an insoluble pink dye.
- A Chromogenic glucopyranoside derivative which is split by β-glucosidase (GLU) with the formation an insoluble blue dye.[9]

- Tryptophan for the detection of tryptophan deaminase (TDA) of *proteus spp.*, *Morganella spp.*, *Providencia spp.* and for indole test for *E. colicolonies*. [9]

**Statistical analysis**

Data were analyzed by SPSS (Specific package for social and statistical programs version 20) using descriptive statistics.

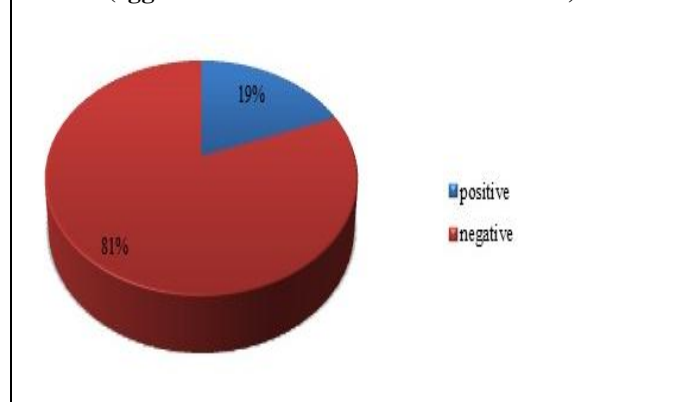
**Ethical consideration**

Urine samples were collected from study population after having their informed consent, also It had been approved by the ethical committee of Nielen University. Positive urine specimens for *Schistosoma* eggs and bacterial infection were treated wherever possible.

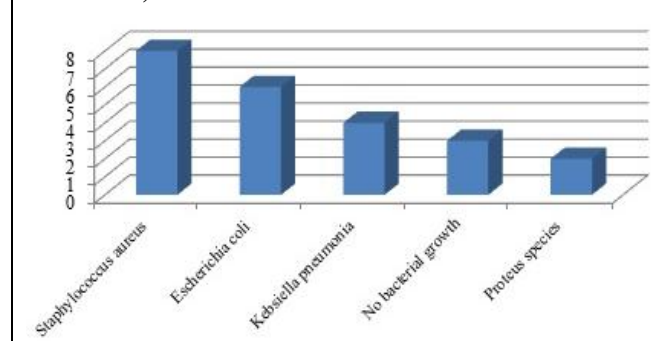
**RESULTS**

From One hundred twenty urine samples collected from Sharag-Alneel villages and examined microscopically after using concentration technique Twenty-three samples (19.2%) were found to be positive and Ninety-seven samples (80.8%) were found to be negative for egg of *Schistosoma haematobium*. The positive samples were cultured onto Chromogenic urine agar medium for diagnosis associated bacterial isolates were found to be *Staphylococcus aureus* in 8 urine samples (34.8%), *Escherichia coli* in 6 (26.1%), *Kebsiella pneumonia* in 4 (17.4%), *Proteus species* in 2(8.7%) and No bacterial growth in 3(13%).

**Figure 1. Distribution of study sample according to Urine results (egg of *Schistosoma haematobium* results).**



**Figure 2. Distribution of study sample (Egg of *Schistosoma ahaematobium* positive results) according to Chromogenic urine agar medium results (Associated bacterium).**



**Table 1. Distribution of study sample according to Urine results (egg of *Schistosoma haematobium* results).**

Urine results egg of <i>Schistosoma haematobium</i>	Frequency	Percent
positive	23	19.2%
negative	97	80.8%
Total	120	100%

**Table 2. Distribution of study sample (Egg of *Schistosoma haematobium* positive results) according to Chromogenic urine agar medium results (Associated bacterium)**

Chromogenic urine agar medium results (Associated bacterium)	Frequency	Percent
<i>Staphylococcus aureus</i>	8	34.8%
<i>Escherichia coli</i>	6	26.1%



<i>Kebsiella pneumonia</i>	4	17.4%
No bacterial growth	3	13%
<i>Proteus species</i>	2	8.7%
<i>Total</i>	23	100%

## DISCUSSION

In our study from One hundred twenty urine samples Twenty-three samples (19.2%) were found to be positive for egg of *Schistosoma haematobium*. Our findings disagreed with that the prevalence of urinary schistosomiasis among 1600 pupils was 57.5% because the difference in the sample size and intrinsic factors of population and localities. [3]

Also our results showed associated bacterial were found to be in twenty (86.9%) urine samples. Our results agreed with the study done in Nigeria shows 75.4% and 88.4 % respectively [3], [4], Apparently our finding disagreed with the study done in Edo state, Nigeria of [5]. [6] showed that bacteruria and bacterial isolates occurred among 60 (30.3%) and 2 (0.9%) respectively this difference in result might be due to introduction of antibiotic drugs. Associated bacterial isolates were found to be *Staphylococcus aureus* in 8 urine samples (34.8%). *Escherichia coli* in 6 (26.1%), *Kebsiella pneumonia* in 4 (17.4%), *Proteus species* in 2(8.7%) and No bacterial growth in 3 (13%) [4]. Their major isolates were *Escherichia coli* in 20.5% of the cases, *Salmonella spp* in

16.1% and *staphylococcus aureus* in 16.1 % of the cases agreed with that of [3] *Klebsiella spp.*, *staphylococcus aureus* with *Escherichia coli* occurring more frequently than the rest and [5]. They reported three nitrate reducing bacterial isolates namely; *Klebsiella spp.*, *staphylococcus aureus* and *Escherichia coli*.

## CONCLUSIONS

In this study 19.2% were found to be positive for egg of *Schistosoma haematobium*, associated bacterial growth were 86.9% of positive urinary *Schistosomiasis* and the most common microorganism was found to be *staphylococcus aureus*.

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## CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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