S. HAEMATOBIOUM 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 Schistosomiatis and the most common micro organism was found to be 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 bacteruria 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 bacteruria 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 villages 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
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), *Klebsiellaspecies* (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. coli*colonies. [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 growthin 3(13%).

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

<table>
<thead>
<tr>
<th>Urine results egg of <em>Schistosoma haematobium</em></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>positive</td>
<td>23</td>
<td>19.2%</td>
</tr>
<tr>
<td>negative</td>
<td>97</td>
<td>80.8%</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>100%</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Chromogenic urine agar medium results (Associated bacterium)</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Staphylococcus aureus</em></td>
<td>8</td>
<td>34.8%</td>
</tr>
<tr>
<td><em>Escherichia coli</em></td>
<td>6</td>
<td>26.1%</td>
</tr>
</tbody>
</table>
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 shows75.4% and 88.4 % respectively [3], [4]. Apparently our finding disagreed with the study done in Edo state, Nigeria of [3] [4] 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%), Klebsiella 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 colioccurring 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 Schistosomaisis 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.

REFERENCES