DISTRIBUTION OF URINARY SCHISTOSOMIASIS AMONG HIGH SCHOOL STUDENTS IN UTUKWANG, OBUDU, CROSS RIVER STATE OF NIGERIA

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ABSTRACT

Investigation on the 200 high school children in Otukwang community, Obudu, Cross River State, Nigeria showed an overall prevalence of 91% with peak prevalence in children between 9-12 years old. There was a higher intensity of infection in females than males (t-test, P< 0.05) in Otukwang community. Mean haematuria was found to correlate positively with the mean ova/10ml of urine. In general, factors responsible for infection included absence of pipe-borne water, presence of infected Bulinus globosus in freshwater bodies and frequent contact of children with cercaria infected waters.

Key words: Urinary Schistosomiasis, Distribution, Students, Otukwang community, Cross River State.

INTRODUCTION

Schistosomiasis is a water borne trematode infection which has been classified as the second most important parasitic disease, with over 200 million people being infected in 74 countries World-wide (Remme et al, 1993). Urinary Schistosomiasis is caused by Schistosoma haematobium and transmitted to man by freshwater snail of Bulinus species. In Nigeria, review of literature revealed wide distribution of the disease with numerous endemic foci particularly in rural riverine areas where infection rate as high as 90% have been recorded (Cowper, 1973). Research evidence indicate that the disease may be increasing in prevalence and importance particularly in remote poorly accessible rural communities (Adewumi et al, 1993, Amole & Jinadu 1994 and Egwunyenga et al, 1994). Although there has been important local success in the control of Schistosomiasis in Nigeria, but at the global level, the infection has increased over the years (WHO, 1993).


The objective of this research was to study the distribution of urinary Schistosomiasis among high school students, Otukwang community, Obudu, Cross River State, Nigeria.

MATERIALS AND METHODS

Study Area

Obudu community is a rural settlement situated about 322km from Calabar Urban, the capital of Cross River state of Nigeria. Alege Community Secondary School, Otukwang in Obudu was chosen for the investigation because it represents at least a cross section of the Obudu community. Subsistence farming is the major occupation of the inhabitants of
this community. There is no potable water supply in this community; hence inhabitants depend on nearby streams as their main source of water supply.

Data Collection

Labelled graduated cups were used to collect terminal urine between 11.00 and 14.00 hours from the students (Pugh, 1979). Selection of the 200 students were randomized for both age and sex with representatives from different classes. Samples were collected from December 2000 to March 2001.

Urinalysis was carried out on the freshly void urine sample using a medi-test combi-9 (Macherey-Nagel, D-5160 Düren) reagent strips to measure the haematuria level in urine.

After urinalysis, 10ml of urine was preserved in two drops of hydrochloric acid and four drops of commercial bleach (Sodium Hypochlorite) (WHO, 1990). Then, 10ml of the treated urine was centrifuged using Hettich Universal II Model Centrifuge at 1000rpm for five minutes. The supernatant was decanted leaving the deposit at the bottom of the tube. To view the deposits, it was aspirated and blown out three times to make it homogeneous before drawing it out finally with the pipette. The deposits were viewed under the compound microscope with x 10 objective. A tally counter was used to count the eggs as the microscopic field was moved. The total number of eggs found in each 10ml of urine specimens were recorded (WHO, 1990).

Student t test analysis was used to determine any significant difference in the mean ova/10ml of urine between male and female students in Otukwang (P < 0.05).

RESULTS

The 200 urine samples examined from Obudu indicated 182 (91%) overall prevalence. The peak prevalence of 100% was reported in children between 9-12 years old. The highest intensity of infection of 169.50 mean ova/10ml of urine was excreted by females between 17-20 years while males in the same age range had the highest egg output of 81.73 mean ova/ml of urine (Table 1).

Statistically, the intensity of infection in Obudu showed significant difference in mean ova per 10ml of urine between males and females (t-test, P < 0.05). The result also showed that as the mean haematuria increase, there was also a proportional increase in the mean ova/10ml of urine. (Table 2).

DISCUSSION

Studies on the distribution of urinary Schistosomiasis in Otukwang community, Obudu, Cross River state was carried out between December 2000 to March 2001. This

<table>
<thead>
<tr>
<th>Age Range</th>
<th>No. Examined</th>
<th>No. Infected</th>
<th>% Prevalence</th>
<th>Mean haematuria (Ery/µl)</th>
<th>Mean ova/10ml</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>F</td>
<td>M</td>
<td>F</td>
<td>M</td>
</tr>
<tr>
<td>9 — 12</td>
<td>38</td>
<td>16</td>
<td>38</td>
<td>16</td>
<td>100</td>
</tr>
<tr>
<td>13 — 16</td>
<td>74</td>
<td>30</td>
<td>68</td>
<td>22</td>
<td>91.89</td>
</tr>
<tr>
<td>17 — 20</td>
<td>30</td>
<td>12</td>
<td>30</td>
<td>8</td>
<td>100</td>
</tr>
<tr>
<td>TOTAL</td>
<td>142</td>
<td>58</td>
<td>136</td>
<td>46</td>
<td>95.78</td>
</tr>
</tbody>
</table>

Table 1: Prevalence and Morbidity of *S. haematobium* amongst the study population -- Otukwang Community, Obudu, Nigeria.
Table 2: Age range, Prevalence, mean haematuria and mean ova/10ml amongst the study population — Otukwng community, Obudu, Nigeria

<table>
<thead>
<tr>
<th>Age Range (Yrs)</th>
<th>No. of Individuals Exaved</th>
<th>No. +ve for S. haematuria</th>
<th>% Prevalence</th>
<th>No. +ve for haematuria</th>
<th>Mean ery/µl</th>
<th>Mean ova/10ml</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 - 12</td>
<td>54</td>
<td>54</td>
<td>100.00</td>
<td>52</td>
<td>130.09</td>
<td>84.48</td>
</tr>
<tr>
<td>13 - 16</td>
<td>104</td>
<td>90</td>
<td>86.54</td>
<td>82</td>
<td>130.83</td>
<td>66.67</td>
</tr>
<tr>
<td>17 - 20</td>
<td>42</td>
<td>38</td>
<td>90.48</td>
<td>38</td>
<td>184.53</td>
<td>109.38</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>182</td>
<td>91.00</td>
<td>172</td>
<td>148.48</td>
<td>86.84</td>
</tr>
</tbody>
</table>

Research revealed an overall prevalence rate of urinary Schistosomiasis to be 91% among the 200 school children examined. In related studies, Etim et al (1998) found 35.95% overall prevalence among 840 persons in Biase community, Cross River state while Abolarinwa (1999) found 30.6% overall prevalence among 624 school children examined in Esie community, Kwara state, Nigeria. In another investigation, Arene and Asor (1999), found 58.2% out of 930 persons examined in Emelelego community, Rivers state, Nigeria. In our studies, urinary Schistosomiasis was found to be very high in Otukwng community. The prevalence of this infection in some areas in the Northern state of Nigeria (Katsina, Kano, Sokoto, Kaduna, Argungu) could be as high as 95% (Cower, 1963).

In the rural settlements in Nigeria, children constitute a great number of the whole population and are generally important reservoirs of infection urinating indiscriminately in or near freshwaters and irrigation schemes. In our studies, peak prevalence was found mainly in children 9 - 11 years old. In other parts of the country, peak prevalence were variously reported between 12-17 years (Arene & Asor, 1999), 8 - 13 years (Dunah & Bristone, 2000), 10 - 12 years (Tukur & Galadima, 1998) and so on. In general, children play a pivotal role in the dissemination of infection as a result of their association with water bodies. They were found to spend more time in water either washing, fishing, swimming or playing; hence, they were more exposed to infection.

There was a higher intensity of infection in females than males in our studies. That is, there was significant difference in mean ova/10ml of urine between the male and female subjects in Otukwng community, Obudu, Cross River State (t-test, P < 0.05). In most rural settlements in Nigeria, more females were involved in household chores requiring water. Since streams were their major source of water, there was increased frequency of contact of females with cercaria – infested waters. This was the probable reason why the intensity was higher in females than males in our studies. Conversely, in other studies, Abolarinwa (1999), Etim et al (1998) found a higher intensity in males than females. They attributed that to a greater tendency for males to swim, play and engage in other activities in the rivers and streams besides the primary household chores mostly executed by women.

Urinary Schistosomiasis is thus highly prevalent in most rural settlements in Nigeria and could be a threat to socio-economic development in all the infected areas. In general, integrated control should be considered in the complete elimination of
urinary schistosomiasis. This involves the provision of pipe-borne water to discourage total dependence on freshwater bodies as exclusive sources of water supply. Intensive health education on the adverse effects of indiscriminate urination into water bodies by infested persons. Reduction in water-contact among inhabitants of rural areas should also be encouraged to reduce contact with cercaria infected water. Chemical treatment of freshwater bodies with molluscicides to eliminate snail intermediate host is also imperative. In conclusion, appropriate Federal Government Agencies should intervene by adopting the integrated control measures in the total eradication of this scourge in all the rural settlements in Nigeria in general and in Otukwang community, Obudu, Cross River State in particular.

ACKNOWLEDGEMENT

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REFERENCES


