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Urinary schistosomiasis among school children in Ile-Ife, Nigeria.

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Summary

A study of urinary schistosomiasis among 553 randomly selected primary and secondary school children in Ile-Ife township in 1988 shows that nearly half (48.5%) of the school children were infected. There was a sharp increase in both the prevalence and intensity of the infection up to age 13 years which then declined slightly by age 14. About 50% of the infected school children had gross hematuria. There was an association between the intensity of the infection and the presence of hematuria. The main strategies recommended for the control of the infection were regular disinfection of ponds and streams in the town and adequate treatment of infected school children, backed up with school health education programme.

Résumé

Une étude de la schistosomiase urinaire parmi 553 élèves et étudiants à Ile-Ife, Nigeria en 1988 révèle que 48.50% ont été atteints. Il y avait une élévation de la prévalence et l'intensité de l'infection à l'âge de treize ans avec une baisse minimale à l'âge de 14 ans. On a découvert une hématurie importante chez 50% des patients atteints; avec une association entre l'intensité de l'infection et l'hématurie. Nous avons proposé les mesures de contrôle parmi lesquelles, la désinfection régulière des marrisots et des rivulets dans la ville et un traitement adéquant des enfants infectés. Ceux-ci devraient être supportés par un programme d'éducation sanitaire dans les écoles.

Introduction

Urinary schistosomiasis, a water-impounding parasitic infection, is a disease of great importance in most parts of developing countries. Studies have shown that the disease is endemic in Nigeria and that

its epidemiological patterns vary from one part of the country to another[1-4].

In Oyo State of Nigeria, the disease is generally believed to be widespread among school-age children[5]. However, there is a need to establish the extent of the problem with a view to planning effective control measures. This study, therefore, represents an effort to determine the prevalence, severity and determinants of the disease among the school children in a defined community in the country.

Materials and methods

The study was conducted in 1988 among primary and secondary school children in Ile-Ife, a town in Oyo State, Nigeria. In the town, there were 42 primary and 21 secondary schools with a total population of 26,890 school children in 1988. The schools were scattered throughout the town. Using a map, the town was divided into four quadrants and a list of primary and secondary schools in each quadrant was drawn up. One primary and one secondary school were randomly selected from each quadrant. An arm of each class from classes 1-6 and 1-5 in the selected primary and secondary schools respectively were also randomly selected for the study. Following permission from the head teachers and parents, urine samples were obtained from the school children in the selected classes between the hours of 10.00 a.m. and 12 noon for examination. Altogether 553 (2.1%) children were selected for the study. Quantification of schistosome eggs in the urine was done by the filtration method[6]. Egg output of between 1-32/10ml urine was regarded as a light infection; 33-256/10ml as moderate, while greater than 256/10ml was regarded as heavy[1]. The sediment was then examined microscopically for evidence of gross hematuria. Information was also

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obtained about their age and whether they bathed frequently (i.e. often), sometimes, or not at all in streams or ponds near their schools in the town or outside the town (i.e. on their ways to or from farms).

Findings

Out of the 553 school children examined for urinary schistosomiasis in the town, two hundred and sixty-eight (48.5%) were infected. Table 1 shows age distribution of the school children. Ninety (23.3%) were infected between the age of 6-7 years, their first year in primary school. The percentages of the infected school children increased with increasing age of the children until it reached a peak of 65.1% at age-group 12-13 years. It then declined slightly to 57.6% at age-group 16 years and above, when the children were ready to leave high school.

Table 1: Age distribution of the school children with urinary schistosomiasis

Age-group	No. examined	No. (%) with schistosomiasis (Egg positive)
6-7	90	21 (23.3)
8-9	85	25 (39.4)
10-11	101	52 (51.5)
12-13	106	69 (65.1)
14-15	86	52 (60.5)
16+	85	49 (57.6)
Total	553	268 (48.5)

Table 2: Age distribution of school children according to the presence of hematuria and urinary egg output

Age-group	No. examined	No. with hematuria	Egg output		
			Light	Moderate	Heavy
6-7	90	4 (4.4)	21 (23.3)	—	—
8-9	85	8 (9.4)	17 (20.0)	4 (4.7)	4 (4.7)
10-11	101	43 (42.5)	26 (25.7)	17 (16.8)	9 (8.9)
12-13	106	59 (55.9)	25 (23.6)	33 (31.1)	11 (10.4)
14-15	86	15 (17.4)	35 (40.7)	17 (19.8)	0 —
16+	85	16 (8.4)	41 (48.2)	8 (9.4)	0 —
Total	553	145 (26.2)	165 (29.2)	79 (14.3)	24 (4.3)

Light = 1-32/10ml of urine

Moderate = 33-256/10ml of urine

Heavy = 256/10ml of urine.

Table 2 shows the prevalence of hematuria and the intensity of infection, as measured by egg outputs in the urine, among the various age-group of the school children. The percentages of school children with hematuria increased from 4.4% in the age-group 6-7 years to 55.9% in the age-group 12-13 years and then declined sharply to 8.4% in the age-group 16 years and above.

The overall prevalence of hematuria among the

school children was 26.2%, which represents about half of the infected population. The table also shows that 29.8% and 14.3% of the school children examined had light and moderate infection respectively, while 4.3% had heavy infection. Majority of the lightly infected were over 13 years while majority of the moderately and heavily infected were between 8-15 years and 8-13 years respectively.

Table 3: Intensity of infection with urinary schistosomiasis and the presence of hematuria among the school children

	Intensity of infection					
	Light		Moderate		Heavy	
	No.	%	No.	%	No.	%
Hematuria	42	25.5	79	100.0	24	100.0
No Hematuria	123	74.5	0	0	0	0
Total	165	100.0	79	100.0	24	100.0

The intensity of the infection was cross-tabulated with the presence or absence of hematuria in Table 3, among those with light infection 42 (25.5%) had hematuria while 123 (74.5%) had no hematuria. However all those with moderate and heavy infection had hematuria.

Bathing in streams and ponds, which were quite abundant in the township or its vicinity, was a common preoccupation of the school children. Two hundred and fifty-one (93.7%) of the infected school children readily admitted to have bathed regularly (i.e. habitually) in the streams or ponds, compared with 45% of the non-infected.

Discussion

This study shows that urinary schistosomiasis is a common health problem among school children in Ile-Ife. About half of the school children in our study were infected with this serious illness which is of the same magnitude approximately as that (41.6%) recorded in another report[7]. During this investigation, discussions were held with some of the parents of the infected school children and they appeared not to appreciate the seriousness of the problem. There was either a tendency for the parents to ignore the problem or resort to the use of traditional remedies.

Our study also confirms the finding of a similar study in the country[2] that shows a characteristic relationship between the prevalence and intensity of infection and age. There was a sharp increase in both the prevalence and the intensity of infection as age of the children increases as shown in Tables 1 and 2 of our study.

Hematuria was observed in about 50% of the infected school children and these were mainly children with moderate and heavy infections. All children without hematuria were, however, lightly infected, showing a significant relationship between hematuria and intensity of infection. In other words,

the more severe the infection, as measured by egg output in urine, the more severe the degree of hematuria in the infected persons.

In conclusion, this preliminary investigation has highlighted the prevalence and intensity of urinary schistosomiasis as a health problem among school children in Ile-Ife township. There is an urgent need to institute control measures against the infection in order to reduce its impact on health of children and this community.

Health education to discourage the children from bathing in infected streams or ponds may not achieve the desired impact because children simply love bathing, especially during the hot and dry season of the year. Therefore, the main strategies recommended for the control of schistosomiasis in this area of the country are:

- (a) Destruction of snail hosts with molluscicides, such as N-tritylmorpholine, sodium pentachlorophenate or copper sulphate. This should be done at the beginning of rainy season when the snails begin to multiply and when there is less weed. When applied to water in sufficient dosage, the chemicals will reduce the snail population by about 90%. Repeat treatment may be necessary after about 6 months.
- (b) Treatment of all infected school children with praziquantel should also be tried as a control measure. Recent studies in Egypt[8,9] show that the drug, when given in single dose of 40mg/kg, reduced significantly the prevalence and the intensity of infection with schistosomiasis haematobium and mansoni. Similar studies need to be conducted in various parts of the country, prior to formulating schistosomiasis control strategies for the country.

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