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C O N T E N T S**ORIGINAL ARTICLES**

Rift Valley Fever in Rhodesia	<i>L. Stern</i> - - - - -	281
Rift Valley Fever in Southern Rhodesia	<i>D. K. Shone</i> - - - - -	284
Bilharziasis in Childhood	<i>F. Morley Smith and M. Gelfand</i> - - - - -	287
Neurosurgical Control of Pain	<i>L. F. Levy</i> - - - - -	289
Pitfalls in Entertaining the Young	<i>E. C. S.</i> - - - - -	297
Torsion of a Wandering Spleen	<i>W. Shepherd Wilson</i> - - - - -	299
Introduction to Medical Writing	<i>R. Whitehead</i> - - - - -	301

EDITORIALS

Pseudotumour Cerebri	305
Hepatic Coma	305
Presentation to Lord Malvern	306
Retirement of William Francis Wynne	306
The Queen's Birthday Honours - - -	308
Opening of Lynbrook, Que Que - - -	308
Salisbury Cardiac Society - - - - -	308
Obituary — Jacob Samuel Liptz - - -	309
In Rhodesia Then - - - - -	310
Correspondence - - - - -	311
Institute on Alcoholism - - - - -	312
Book Reviews - - - - -	313
The Journal Library - - - - -	314
Latest Pharmaceuticals - - - - -	316

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Bilharziasis in the African Infant and Child in the Mtoko District, Southern Rhodesia

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This study was undertaken with several objects in view. First of all we wanted to know how frequently bilharziasis is likely to infest infants up to the age of two years in an endemic area. On first thoughts it would seem reasonable for the disease to be rarely encountered at this stage of life, since the African babe is seldom exposed directly to the streams or the water's edge for fear that it might be drowned or injured by crocodiles. On the other hand, it must be admitted that the infant is often washed in water carried from the river in buckets or gourds, and unless the water is kept standing for 24 hours or boiled soon after collection, many of these children can be expected to acquire the disease. Then there is the possibility that the African infant born of a mother, herself probably infected for many years, may have a passive immunity conferred on it by her and is therefore more able to resist infection by the cercariae at this age than when it is older.

From about the age of four years the disease is regularly encountered, and as the child grows up it appears to become more frequent. It is thus expected that more cases are encountered at the age of eight than at four. In this little study we endeavoured to find out whether this is so or not.

In the adult it has often been stressed that there is frequently no history of a local disturbance. For instance, in our experience of African adults more than half do not complain of urinary or bowel symptoms. It was hoped that this study would also provide us with some idea as to whether or not this is so in children.

PROCEDURE

1. *The Incidence of the Disease in Infants*

A single specimen of stool and urine was collected from each infant up to the age of two years and examined microscopically for ova by an African microscopist. The infants were

brought into the Mtoko clinic for various reasons, and all those brought in were investigated, there being 27 in all. In order to compare the incidence of the disease in them with that in older children, single specimens of urine and stool were collected from a similar number of older children also attending the clinic.

Results.—Of the 27 infants tested, 10 were between two and three years, nine between one and two and eight under a year. Ova of *S. haematobium* were found in two females—one of whom was a year and a quarter old and the other a year and a half. In none of the infants was *S. mansoni* discovered. Of the 27 older children from four to 11 years old, 15 showed *S. haematobium* in the urine and one ova of *S. mansoni*.

Comments.—It would appear that in an endemic region urinary bilharziasis is rare in infants, but becomes more frequent from the age of four years. In this series only one case of *S. mansoni* was encountered and so one cannot comment on the relative frequency with which this form of the disease occurs in infants and children. In any event, *S. mansoni* may be rare in this district.

2. *The Frequency of Urinary Bilharziasis from the Ages of Four to Twelve Years*

Sixty-three children from the ages of four to 12 were investigated. From each child a specimen of urine was collected and examined for ova by the usual method.

Results—

Age	No. Examined	No. Positive
4	5	2
5	7	2
6	7	5
7	7	2
8	5	4
9	5	3
10	10	6
11	5	2
12	12	9
	63	35 (55.5%)

Out of 19 children from four to six years old, nine had the infection (47 per cent.). Seventeen in the seven to nine year old group were tested, nine being positive (53 per cent.); and of the 27 from 10-12 years old, 17 were positive (63 per cent.). It would thus appear that as the child becomes older there is an increased liability to the infection.

3. *The Main Clinical Features of the Disease in Children*

For the younger children we had to rely on either the parents or older brothers and sisters for the answers to our questions. In addition, it should be remembered that history-taking in Africans is often unreliable. But it is felt that when a fairly large number are interrogated, the results may have some value.

Results—

(a) *S. mansoni*.—Twenty-one children with ova of *S. mansoni* in the stools were investigated. Six of them also had ova of *S. haematobium* in the urine. Fifteen of the children actually consulted the clinic because of abdominal symptoms. Ten complained of abdominal pain and discomfort and one of ascites. Six mentioned no abdominal symptoms (of these, four had haematuria, two complained of a rash and one of loss of weight).

Blood in the stool had been observed from two weeks to eight months before by ten subjects. Eighteen admitted to abdominal pain or discomfort and 16 to diarrhoea up to eight months previously. Seven of the patients also mentioned a haematuria, probably due to an infection with *S. haematobium*.

Comments.—Almost all the children with *S. mansoni* admitted to abdominal symptoms, usually abdominal pain, discomfort or diarrhoea. After direct questioning, very few were found to be free of any symptom referable to the abdomen or bowel. In this series only one child, aged 11 years, was free of symptoms.

(b) *S. haematobium*.—As with the children with *S. mansoni*, several routine questions were asked, relating this time to the urinary tract.

1. *The Reason for Coming to the Clinic*.—Twenty-three out of 27 children gave haematuria as the reason for the visit, two mentioned painful micturition and six referred to abdominal pains. Sixteen gave various reasons, such as debility, a rash, joint pains and a cough.

2. *A History of Haematuria* was given by 32 out of 47 patients. In some the duration of the bleeding was short—only a few weeks—but in others it was a year or two or merely mentioned as “a long time.”

3. *Frequency of Micturition*.—Sixteen out of 47 cases admitted to frequency of micturition.

4. *Pain on Micturition* was mentioned by 21 of the patients.

5. *The Site of the Abdominal Pain* varied. Twenty-one patients complained of pain over the bladder in front and one around the umbilicus. Twenty-five made no complaint of abdominal pain. Five subjects with hypogastric discomfort also mentioned some uneasiness in the urethra.

6. Of the 47 cases with *S. haematobium* infection, five also showed ova of *S. mansoni* in the stools. Diarrhoea was mentioned only twice, both times by children in whom ova of *S. mansoni* had been found in the stools.

CONCLUSIONS

It would appear from this study in African children living in an endemic bilharzial region

that diarrhoea and abdominal pain were the main complaints in *S. mansoni* infection. Blood in the stool was a common complaint, but mucus was rarely mentioned.

In *S. haematobium* infestations, haematuria was the most frequent complaint. It occurred in 32 out of 47 cases, whereas frequency and pain on micturition were mentioned much less often. When pain was experienced it was generally felt in the hypogastrium and very rarely in the urethra. From the frequency with which the symptoms were mentioned it appears that the child, infected with either the urinary or even the intestinal form of bilharziasis, develops symptoms in contrast to the adult, who is seldom aware of symptoms referable to the bladder or intestine.

Infants up to the age of two were found to be infrequently infected in comparison with those from four years upwards. Once the child was able to move about, the disease became more frequent and the children in the older age groups were more often infected than those in the younger ones.

Ransford (1948) found bilharzial infection extremely rare in children under four years of age in the endemic district of Kota Kota, in Nyasaland, but over half of the older children had the infestation. His findings in Nyasaland are similar to those in the Mtoko district.

Is the infrequency of bilharziasis in the infant due to its not being exposed to infected waters for fear of drowning or attack by crocodiles? Or is it the result of a state of tolerance against the infection possessed by the infant? On enquiry, we were informed that many of the infants are actually bathed in pools when the mothers go down to the rivers to do their laundry. Thus, even if the infant is not exposed as often as the child, one would still expect many more of them to show ova in the urine or stool. We therefore suggest that a state of tolerance or acquired resistance is conferred in an endemic area on the infant born of a mother who is almost certain to be infected herself or who has suffered from the disease in the past.

REFERENCE

RANSFORD, O. N. (1948). *Trans. Roy. Soc. trop. Med. and Hyg.*, 41, 617.

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