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Investigations into the Action of praziquantel against Schistosomiasis Mansoni and Hematobium in an Endemic Aera of Northern Nigeria under field conditions

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Introduction

This investigation was set up in Bauchi State in the northern part of Nigeria, during the period January 1981 to January 1982.

It was held in the General Out Patient Department of Bayara Leprosy Hospital. This O.P.D. serves a large rural area, some patients come as far as from 100 km away.

The hospital is owned by the Gouvernment of Bauchi State since 1976, and was under mission before that time.

Of course, in an introduction to a schistosomiasis-story, more information about the local water resources is needed.

The rainy season starts in April and ends in October. From November to March there is no rain at all. Many rivers dry up and also the water level of many primitive wells descends. in the towns water is sold for as much as N 1.50 per tin of 4 gallon (40 Os). Only very deep wells like boreholes continue to give water of good quality in sufficient quantities. It is not easy to drill them well, even the expatriate staff of the Steyr factory was lacking water sometimes!

There were no irregation projects in the area, nor running nor under construction. The majority of poeple were using both well and river water, but there were large areas like Tafawa Balewa LGA where the rivers were the only available source.

During the period of investigations noting has been done against the snails, and as far as I know, it has not been done during our stay of four years. Sometimes health education campains are held in the villages while commercial gifts like milk powder, are presented to the people. But there is no systematic fight against Schistosomiasis.

In Northern Nigeria the treatment of choice for is schistosomiasis Niridazole (Ambilhar) and sometimes even antimonials. Drugs (and all medical care) are free. These drugs however were usually out of stock in the hospitals and patients were advised to buy it in the chemisty.

Via the Steyr factory in Bauchi we came in contact with Dr. Stemberger, who, trough the "Save the children" Fund was able to provide Biltricide.

Methods

The condition under which we worked may need some explanation, since it had its influence on the investigations.

The hospital was not connected with the national electricity network, but had its own generator set. This meant that due to lack of diesel, lack of funds or technical ailments

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we had rather frequent power failures. So there was electric light in the microscope. If none, we used the sun outside. Anyway, different conditions under which the lab technician was working. There was only a hand spinned centrifuge, with a labourer turning it around. So his physical condition must have some influence on the sediment. The stool was examined as a simple direct faecal smear, no concentration methods have been used. This all means that the results of the parasitological examinations were only qualitative and not quantitative. Therefore more emphasis in this investigation was put on the subjective feeling of improvement after the treatment.

We treated the patients with a single-day regimen, first 30 mg per kg, later 50 mg per kg body wheight, all devided in 3 daily dosis, 4 hours apart. All patients who visited the OPD for their complains, and who were found the have S. Mansoni or S. Hematobium ova in stool or urine, were included in the investigation. Exeptions were made for pregnant women. There were few who came only for a medical test and who were found to have S. Mansoni or Hematobium ova in stool or urine, they were also included.

All patients were instructed about the regimen of treatment, and were asked to return after 6 weeks and 3 monthes to report about their improvement and about evt. side effects.

Besides that the patients were carefully informed about the cause of Schistosomiasis and were instructed not to use surface water. In general no physical examination was done, because of lack of time during OPD hours. Besides that the relative short evaluation period makes it unlikely that for instance decrease in hepatosplenomegaly will be detected.

When they returned a carefull anamnesis was taken, with special accent on their initial complains and or any side effect. The stool and/or urine was examined again.

Results

Altogether 606 patients were treated, 407 male and 193 female. The age varied from 10 months to 62 years.

Their maine complain was stool with blood, sometimes with frequent motions and colic pains, usually 4 to 6 times daily, in case of infection with S. Mansoni. In case of infection with S. Hematobium they usually complained of terminal macroscopic hematuria, sometimes with dysuria. There were few patients with aspecific abdominal pain only. They were all in good condition. None of them was seriously ill.

Fom this 606 patients only 119 (20%) reported back for evaluation. Of this 119, 36 suffered from S. Mansoni, and 83 from S. Hematobium. The average age of the Mansoni patients was 17,5 years, and varied from 4 to 50 years, while the average age of those with Hematobium was 13,9 years and varied from 1½ to 50 years.

This group of 119 patients can be devided into 4 subgroups, 2 with S. Mansoni who recieved 30- and 50 mg/kg (6 resp 30 patients) and 2 with S. Hematobium who also received 30- and 50 mg/kg (23 resp 60 patients).

They were all asked to return after six weeks, but for unknown reasons they usually turned up after four to five weeks, and unfortunately they did not return after 3 months. The results of the treatment are summerised in fig. 1.

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Fig. 1

treatment regimen	number of patients	average age years	recovered without complains	idem but still excreting ova	still complains	idem and still ova	less complain	idem still ova	average evaluation period in weeks
Mansoni									
30 mg/kg	6	8.8	6	1	0	0	0	0	5
50 mg/kg	30	19.3	27	1	0	0	3	0	5.1
Hematobium									
30 mg/kg	23	9.7	11	1	10	10	2	0	4.1
50 mg/kg	60	14.1	39	8	13	10	8	4	5.3

Side effects

In the literature a lot of subjective side effects are observed. Davis et al (1979) mentions epigastric pains, frontal headache and anorexia. S. Diallo (1981) observed abdominal pain, headache and/or nausea in 35% of his patients. J.E. McMahon (1981): sleepiness and tiredness. In the survey of A.B.O.O. Oyediran et al (1981) only 2 outof 90 children complained of moderate periumbillical pain. In another survey J.E. McMahon (1981) observed abdominal pain and loose bowel movements besides urticaria and/or itching. D.H. Smith et al (1981) observed abdominal pain and fatigue. P. Rayu et al (1981) found epigastric pain sometimes with diarrea. A.M. Polderman (personel communication 1982) observed in Zambia shortly after praziquantel was given (for S. Mansini) a short period of dysenteria subsiding without treatment in few hours. All the above named authors considered the side effects as relative mild and transient.

I did not observe any side effects, probably because the long period between treatment and evaluation made the patients forget about minor ailments.

Discussion

Since the parasitological examinations and results were of limited value in this case, more emphasis was put on the subjective improvement. I consider this very important since the cooperation of the patient is of much value in any public health programme against Schistosomiasis.

In S. Mansoni the improvement was exellent, all patients who recieved 30 mg/kg praziquantel were free of complains in averaged 5 weeks.

The only one who was still excreting ova stopped doing so, as detected when he came for the second follow up after 3 months.

The patients who recieved 50 mg/kg also responded well to treatment, 27 out of the 30 wer free of complains, there was only one who was still excreting ova after 4 weeks, but after 7 weeks none were seen in his stool. 3 patients were reporting that they still passed stool with blood, but less than before treatment, no ova were detected in their stool.

Since all these patients were detected with a simple feacal smear, which is not very sensitive, it is likely that they have been rather heavily infected. This makes the results very good. Besides this it is remarkable that increasing the dosis, did not improve the results.

In S. Hematobium the results were not as good as in S. Mansoni. 11 of the 23 patients who recieved 30 mg/kg were free of complains after 4 weeks. Increasing the dosis to

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50 mg/kg improved the results. Now 39 out of 60 patients were free of complains after 4 weeks. Unfortunately nobody returned after 3 monthes.

Summary

606 patients infected with S. Mansoni or S. Hematobium were treated with 30 mg/kg and 50 mg/kg praziquantel as a single day regimen. 20% reported for follow up. They were mainly seen after 4 to 5 weeks, and especially their subjective feeling of wellbeeing was recorded. Patients infected with S. Mansoni responded well on praziquantel, whereby it is noted that increasing the dosis had no effect on the results. Patients with S. Hematobium did not respond as good as those with Mansoni. Side effects were not observed.

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