Clinical Trial of Bayer 2249 in Urinary Bilharziasis

BY

W. FRASER ROSS,
B.Sc., M.B., Ch.B. (St. And.), D.P.H. (Lond.)
Senior Medical Officer, Ministry of Health, Salisbury.

Schistocide Bayer 2249, so-called "Tasteless Miracil," was submitted to a clinical trial. This compound, which has been synthesised by the Farben Fabriken Bayer, Leverkusen, is a development of lucanthone hydrochloride, which has been used for the last ten years in the treatment of bilharziasis, particularly the urinary infection with *S. haematobium*. Blair *et al.* (1949) had reported a 90 per cent. cure with lucanthone hydrochloride, and it was decided to compare and contrast Bayer 2249 with lucanthone hydrochloride.

The patients selected for this trial were young men between the ages of 17 and 22 years who were attending a Government industrial school for Africans, and also a smaller group of children aged 6 to 11 who were attending a nearby rural school. It was possible to keep all the patients under close supervision and ensure that the drug was taken at the correct intervals.

All the patients had a sample of urine examined on the day preceding the commencement of the trial and all the urines showed active, viable ova (of *S. haematobium*) which hatched miricidia.

The patients were divided into four groups:

Group A: Twelve patients, ten males and two females; weight range, 21-70 kg.

Group B: Eighteen patients, 18 males; weight range, 23-81 kg.

Group C: Eighteen patients, 16 males and two females; weight range, 21-68 kg.

Group D: Nine patients, nine males; weight range, 58-65 kg.

The following dose schedules were employed:

Group A: Lucanthone hydrochloride 60 mg./kg. in six divided doses given morning and evening for three days.

Group B: Schistocide Bayer 2249, 60 mg./kg. in six divided doses given morning and evening for three days.

Group C: Schistocide Bayer 2249, 75 mg./kg. in six divided doses given morning and evening for three days.

Group D: Schistocide Bayer 2249, 60 mg./kg. in six divided doses given morning and evening for three days.

All doses were given to the nearest 100 mg. of drug. Groups A, B and C had the drugs administered between 12th and 14th February, 1959, inclusive and Group D between 26th and 28th February, 1959, inclusive.

During the administration of the drugs a careful check was kept on any symptoms which the patients might complain of or any signs which might be exhibited, with the following results:

Group A: One patient had blood in the urine on the third day, vomited and missed one dose.

Group B: One patient complained of chest pain and constipation on the third day; one patient vomited on the third day; both refused the sixth dose. One patient missed the second dose, but took the sixth dose on the morning of the fourth day.

Group C: One patient complained of nausea and constipation, five of vomiting, while one had nausea, vertigo and lack of co-ordination for one day following cessation of drug. This latter patient undoubtedly had toxic symptoms from the drug.

Group D: One patient vomited on one occasion, but took all doses of the drug.

Results

In Groups A, B and C follow-up examinations were carried out on the urines of the patients one week, two weeks, three weeks, four weeks, seven weeks, twelve weeks and fourteen weeks after completion of the treatment. In Group D the follow-up examinations were carried out one week, two weeks, five weeks, ten weeks and twelve weeks after completion of the treatment. Each urine was examined microscopically for the presence or absence of ova and the presence of flame cell activity and miracidia. The criterion of cure accepted was the absence of any flame cell activity and miracidial hatching three weeks after completion of treatment and each subsequent examination of urine remaining thus up to twelve or fourteen weeks following treatment.

Using this criterion, the following results were found:

Group A: Twelve patients, 12 cured. Cure rate: 100 per cent.

Group B: Eighteen patients, 12 cured. Cure rate: 67 per cent.

Group C: Eighteen patients, 17 cured. Cure rate: 93 per cent.

Group D: Nine patients, eight cured. Cure rate: 89 per cent.

Discussions

Using lucanthone hydrochloride as a basis of comparison, it will be seen that Schistocide Bayer 2249, in both 60 mg./kg. and 75 mg./kg. doses, appears to be less effective than lucanthone hydrochloride. There appeared to be more gastric disturbance with Schistocide Bayer 2249 than with lucanthone hydrochloride, certainly at the 75 mg./kg. level, and the patients appeared to complain of the taste as much as with lucanthone hydrochloride, thus belying the claim of its being tasteless. It would thus appear that Schistocide Bayer 2249 has no merits over lucanthone hydrochloride in the treatment of urinary bilharziasis.

Summary

(1) A series of patients were treated with Schistocide Bayer 2249 and lucanthone hydrochloride.

(2) Two dose regimes were studied and the patients followed up for twelve to fourteen weeks following treatment.

(3) Schistocide Bayer 2249 was less effective therapeutically than lucanthone hydrochloride and had no advantages in respect to diminished toxity.

REFERENCE

Blair, D. M., Loveridge, F. G., Meeser, C. V. & Ross, W. F. (1949). *Lancet*, 1, 344.

Acknowledgments

Grateful thanks are due to Dr. D. M. Blair, O.B.E., Secretary for Health, for permission to publish these findings; and to Mr. A. Burgan, of Domboshawa Government School, and the staff of the Malaria-Bilharzia Research Laboratory for their aid in carrying out these trials. I am also indebted to Dr. Karl Koenig, of Bayer, for supplying me with samples of Schistocide 2249.