

Investigations into Schistosomiasis in Sheep in Mashonaland

BY

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In order to arrive at an accurate figure for the incidence of schistosomiasis in sheep in Mashonaland, a survey of sheep slaughtered at the Cold Storage Commission abattoir commenced in September 1968.

As the examination of mesenteric vessels for the presence of parasites was impractical, it was decided that the examination of a portion of liver for the presence of aberrant schistosome eggs would be the simplest and most reliable method.

A portion of each liver showing lesions indicative of schistosomiasis was collected by the meat inspection staff and examined at the District Veterinary Office for the presence of schistosome eggs.

At the beginning of November 1968, it was decided that the existing method would not reflect the true incidence of the disease and a portion of liver from each sheep slaughtered was subsequently collected for examination.

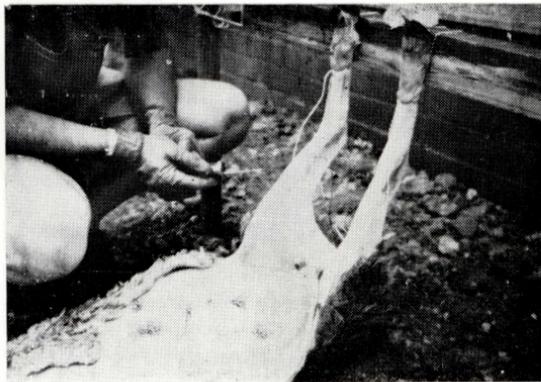
Figures available to date indicate that 40 per cent. of flocks from which animals have been slaughtered at the Cold Storage Commission are infected. In some cases, 100 per cent. of specimens from one source have been infected.

To date, 2,500 livers from 243 sources have been examined.

A point of interest was that in one flock the presence of eggs of *Schistosoma mansoni* were detected. In another flock, it appeared that the sheep were infected with both *S. haematobium* and *S. mattheei*.

Experimental Infection in Sheep

On 3rd December, 1968, Blair Research Laboratory exposed 39 *Bulinus (Physopsis) globosus* to miracidia hatched from eggs obtained from bovine bladders.



Illust. 1.—Sheep anaesthetised and secured in dorsal recumbency being infected with cercariae.

The snails were maintained in aquaria and were observed to be shedding cercariae on 27th January, 1969.

Twenty-five young ewes were obtained from a flock which had been observed over a period of 5 months. The only source of water for this flock was from a borehole supply and sheep sent to the Cold Storage Commission for slaughter had been examined with negative results. The sheep are confined in two loose boxes in a small run and are fed a ration of freshly cut veld grass and hay.

Twenty of these sheep were artificially exposed to infection, leaving 5 as a control group, in an endeavour to follow the clinical picture as it develops and to carry out drug trials.

The sheep were tranquillised and anaesthetised, and secured in dorsal recumbency. The skin of the groin was cleaned to remove the secretion from the grease gland and the cercariae were then placed in the pocket formed in the groin.

The sheep were exposed to the cercariae for half an hour.

On 6th February, 1969, 5 sheep were exposed to 1,000 cercariae present in 2 cc. of water, following tranquillisation with Acetyl promazine by intra-muscular injection and anaesthesia with pento-barbitone sodium. Anaesthesia was maintained by a further dose of pento-barbitone after a period of 15 minutes.

Twelve sheep were infected on 13th February, 1969, with 1,000 cercariae contained in 13 cc. of water, but on this occasion Chlorpromazine was administered intravenously as the Acetylpromazine used previously had not produced a satisfactory degree of tranquillisation.

The remaining 3 sheep were infected on 20th February, 1969.

In several of the sheep, quite marked inflammation occurred as a result of cercarial penetration of the skin. This inflammation lasted for a period of 3 days.

The sheep were dosed for worms prior to purchase and have been treated with Thibenzole on three occasions since the beginning of the trial to eliminate the possibility of a helminth burden confusing the results. Faeces samples have been regularly checked to establish that no helminth infestation is present.

Full haematological examinations were carried out before the sheep were infected to detect any variation from normal. Haemoglobin and leucocyte counts in all cases were within the normal range.

Weekly blood samples and weight records show no significant difference between the infected and control groups and there is no evidence so far of any ill effects due to the infestation.

The intradermal test using *S. matthei* antigen has not proved positive to date. This test had previously been applied in the field on known infected and uninfected flocks and appeared to give reliable results.

All the infected sheep have produced antibodies to the cercariae between the 21st and 26th day of infection.

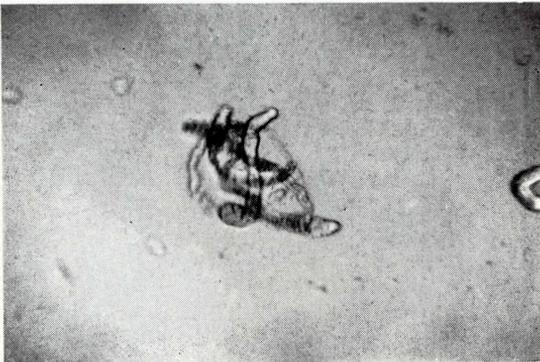
Agglutinins were demonstrated by the addition of at least 30 cercariae contained in approximately 0.05 cc. water to an equal quantity of plasma.

Clumping of the cercariae occurred within 15 minutes in all sheep. Control sheep have remained negative to the test.

If clinical evidence of an infestation develops, it is hoped to carry out drug trials.

I would like to thank Mr. E. B. Grainge and the staff at Blair Research Laboratory for their willing assistance. Without their help and guidance it would have been impossible to commence this trial.

There was no discussion recorded.



Illust. 2—Cercarial agglutination in plasma from an infected sheep.