

Parasitism in Calves

Reports on three recent outbreaks

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THERE is little information concerning the extent of parasitic infestation in cattle, particularly subclinical infestations. Relatively few experimental studies of parasitic infestations in cattle have been made. This is due, in part at least, to the high cost of cattle as experimental animals and the space required for conducting experiments on them. Internal parasites have long been recognized as a hazard in the production of sheep and swine but comparatively few livestock raisers realize that in many instances parasites cause serious losses in cattle. Even when parasites are present in sufficient numbers to produce clinical symptoms, these symptoms are often confused with and ascribed to other conditions. This is particularly true in those areas where parasitism occurs in conjunction with malnutrition.

The importance of the round worms occurring in the abomasum is quite generally recognized as a cause of parasitism in calves. The importance of those nematodes whose normal habitat is in the small intestine is frequently underestimated or disregarded entirely. There are 2 genera in particular found in the small intestine which may cause considerable losses when present in any appreciable number. These genera are *Cooperia*, the cooperid worms, and *Bunostomum*, the hookworms. Descriptions of animals parasitized by *Cooperia* spp. (1) (2) indicate that one species at least, *Cooperia punctata*, can penetrate the intestinal mucosa and produce considerable injury. Animals para-

sitized by hookworms manifest the characteristic anemia and edema similar to that resulting from infestation with other blood-sucking parasites. The clinical symptoms of hookworm infestation in cattle is practically impossible to differentiate from those symptoms produced by stomach worm infestation. Deaths of calves due to infestation with *C. punctata* have been reported from Louisiana, Maryland, Virginia and Ohio (3). Reports of infestations with the cattle hookworm, *Bunostomum phlebotomum*, indicate that it is also probably well distributed in the United States, especially in the South. However, there have been fewer reports concerning its occurrence.

Failure In Diagnosis

Many cases and outbreaks of parasitism in cattle are either misdiagnosed or left undiagnosed. There are probably several reasons for this. One reason is the assumption that the animal could not be parasitized because it had been recently treated with an anthelmintic. Another source of error in diagnosis is failure to find parasites at autopsy because of incomplete examination, particularly of the small intestine. In many instances only the abomasum is examined for the common stomach worm.

As a contribution to the knowledge relating to parasitism in calves we are presenting reports on 3 outbreaks which have occurred recently.

A ranch in south central Texas operates with about 1,600 cows of Brahman, Hereford and mixed breeding. The calves are usually sold off the grass as yearlings. Much of the pasture is in the Brazos

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River bottoms and poorly drained. In September, 1945, several calves developed a diarrhea and 10 died showing marked emaciation and anemia. Autopsy by the owner revealed many *Haemonchus contortus*. All calves were treated with phenothiazine and moved to another pasture. The animals temporarily improved in condition following treatment. In December, 1945, approximately 200 calves were again drenched with phenothiazine by the owner and were placed in a feed lot which had a small trap adjacent consisting of about 10 acres. Both feed lot and trap were flat and poorly drained. Several calves were unthrifty, some died and the owner again drenched all the animals with phenothiazine about 3 weeks later. This, however, did not check the loss. By January 15, 30 calves had died and several more were extremely debilitated and anemic.

Autopsy

Two calves presented for diagnosis were killed for autopsy. There was marked edema and anemia present in both animals. Only a very few *H. contortus* were present in one animal. The small intestines of both were opened and found to contain a large number of hookworms and cooperids. A quantitative estimate of worms present was made in each case. There were more than 6,000 hookworms and 4,000 cooperids in one calf and more than 3,500 hookworms and 2,000 cooperids in the other. Since the calves had received phenothiazine 3 times previously, it was thought advisable to change treatment.

Anthelmintic

Accordingly, a copper sulphate and nicotine sulphate solution, such as recommended for the treatment of stomach worms, was given at the rate of 1 cc. per pound body weight. This solution was prepared by adding 1 fluid ounce of 40 per cent nicotine sulphate to 1 $\frac{3}{4}$ per cent copper sulphate solution in $\frac{1}{2}$ gallon of water. The animals were placed in a clean, well drained feed lot 2 days after giving the anthelmintic. Two animals died the day following treatment. The remainder made an uneventful recovery and were sold for slaughter in April.

On January 11, 1946, part of the viscera of a calf was received from a practitioner in east Texas who requested a parasitologic diagnosis. Examination revealed many *Cooperia* spp., hookworms (*Bunostomum phlebotomum*) and 1 tapeworm (*Moniezia* spp.). No attempt was made to estimate the total number of parasites since only 10 feet of the small intestine was received. However, 1,700 hookworms and 300 cooperids were recovered from this specimen. According to the history, the owner had experienced difficulty in raising calves during the 4 years he had been on the place. This particular herd contained 16 yearlings and 10 two-year-old dairy calves in a low flat pasture that contained a ground tank as the water supply.

After the diagnosis was reported the following treatments were administered: 1st, phenothiazine; 2nd, 2 weeks later, copper sulfate and lead arsenate tablets (Jen-Sal); 3rd treatment, 2 weeks later, 10 cc. tetrachlorethylene in mineral oil was given for each 100 pounds body weight. There was decided improvement for about 1 month, but since it was impossible to convince the owner a change of pasture was necessary, further improvement was retarded by reinfestations. However, the death losses were stopped.

Third Outbreak

The anterior portion of the small intestine of a calf was received January 21, 1946, with history as follows: 10 calves, all yearlings, were confined to a $\frac{1}{2}$ acre yard that had been used for years as a calf lot; 3 calves had died and on examination revealed heavy hookworm infestation. The calves were then treated with phenothiazine which was followed 2 weeks later by tetrachlorethylene. The calves were then placed in a clean lot. All 7 surviving calves became thrifty and no more losses occurred.

After summarizing the diagnosis, treatment and control of parasitic infestation in calves, one should suspect parasitism when animals show a rapidly progressing general debility, emaciation and anemia with no loss of appetite. The fact that

some anthelmintic treatment has been given does not rule out parasitism. Rainy seasons, wet swampy pastures and overstocking provide favorable conditions for reinfestation. The actual diagnosis of parasitism may be made by a carefully conducted post-mortem examination. The contents of the stomach and small intestines should be carefully examined for the presence of the smaller nematodes. Frequently, alternation of anthelmintics will provide clinical results when repeated treatments with the same drug fail. This is particularly true in heavily parasitized animals suffering from mixed infestations. Regardless of treatment, one must investigate measures based on the bionomics of the parasite present in order to prevent reinfestation. Reports are presented of 3 outbreaks of severe intestinal parasitism in cattle.

- (1) Dikmans, G. Parasitic Enteritis in Calves, *Vet. Med.* 34:28-30. 1939.
- (2) Hung, See-Lu. The Pathology of *Cooperia punctata* Infestation in Calves, *North American Veterinarian*, 7(3):33-36. 1926.
- (3) U.S.D.A., Vir. 614. Internal Parasites of Cattle. Jan. 1942.

Pyridoxine, vitamin B 6, is reported by Cantor and Scott of the University of Alberta to be effective in the treatment of sulfathiazole, aspirin and thiouracil poisoning.

Change of Address

Difficulty is being encountered in the circulation department. Issues of *The Veterinary Student* are being returned due to the change of address or because the issue is unclaimed. This is especially true with the past and present members of the armed forces. It will be greatly appreciated if we are notified, as soon as possible, when there is any change in a subscriber's address. If this is done your current issue will not be lost or returned to us unclaimed.

Malaria

According to Dr. Carl Jordan, head of the division of communicable diseases of the Iowa department of health, malaria fever may be more prevalent in Iowa this summer than ever before unless people take the proper precautions. At the present time the disease occurs mostly among returned servicemen who contracted it overseas and suffer relapses after returning home. Dr. Jordan warned that unless the *Anopheles* mosquito's breeding places are checked and destroyed the disease will spread generally. In Iowa during the first 4 months of this year a total of 191 cases of malaria fever have been reported, as compared with 12 cases reported at this time last year. Malaria fever has proven to be the most common disease brought back by returning servicemen.

Each pig farrowed dead represents a loss of about 140 pounds of feed, according to Purdue University swine men. This fact was arrived at from experiments conducted on a typical Indiana farm.

If the pig dies at weaning time, about 10 weeks of age, there is a loss of an additional 120 pounds of feed making a total of 260 pounds of feed wasted.

Eight weeks after weaning, another 100 pounds of feed has been consumed, which runs the total feed waste up to 360 pounds. At the end of the fattening period, the total feed consumption of the average pig is 992 pounds. This is what is lost if cholera or some other disease kills a hog ready for market.

Experiments at the Wyoming Experiment Station to determine the effect of vegetable protein on meat quality of hogs indicated that when fed corn gluten meal, the flesh had a yellow color and when cooked was juicier than when soybean or cottonseed meal was the concentrate used.