

FACTS AND FICTIONS ABOUT TAPEWORM IN SHEEP

Seyedmehdi Mobini, DVM, MS, Diplomate, ACT

Professor of Veterinary Science

Fort Valley State University

Fort Valley, Georgia, 31030

USA

Parasitism and Gastrointestinal Nematodes (GIN) parasitism in particular, is arguably the most serious constraint affecting sheep and goat production. Economic losses are caused by decreased production, cost of prevention, cost of treatment, and health of infected animals.

The most common sheep tapeworm (*Monieziaexpansa*) is seen in young lambs as white segments like grain of rice in the faecal droppings. The harmfulness of tapeworm in sheep has long been debated. Studies showed conflicting productive responses on weight gain in lambs treated for tapeworms. Because tapeworm segments are visible in the feces, owners are often concerned. Veterinarians on the other hand, consider this less worrisome because tapeworms usually have little pathologic effect. GIN parasitism in sheep together with significant resistance to anthelmintics are considered to be more important and dominate research in recent years.

Tapeworms of sheep are flat worms that live as adults within the small intestines. They grow up to 2 meter long and are formed replicated segments (proglottids) that are detached when full of eggs. The segments appear like grains of rice in the faeces of infected animals and appear from about six weeks after infection. Sometimes long strings of segments are passed from an animal because of tapeworm death. Eggs are triangular in shape and can be seen in the feces using standard worm count procedures.

The life cycle of *Moniezia* differs from the life cycle of GIN. Tapeworm eggs can survive several months in the environment, and are ingested by the free living pasture mite to continue development. Inside the mite, the tapeworm develops over a period of 10 weeks into larvae. When sheep consumes fully developed pasture mites while grazing, the tapeworm larvae complete its development into the adult stage in the small intestine. It takes about 6 weeks for a mature tapeworm to form and start shedding segments containing eggs.

Clinical Signs: infection is more common and apparent in lambs than adult sheep. Tapeworms absorb nutrients from the gut contents rather than feeding on blood as in GIN. Their impact is on the flow of the gut contents and the ability of the sheep to absorb the nutrients. Adult sheep generally develop resistance and rarely suffer any major problem. Lambs and weaners have no resistance and may be vulnerable to reduced feed efficiency and gut blockage. Diarrhoea and mild unthriftiness are signs associated by farmers with heavy tapeworm infestation in lambs. Assignment of these signs solely to tapeworm is often unjustified as lambs may be concurrently infected by GIN, other pathogens, and nutritional deficiencies. Where nutrition is in relatively short supply, the effect of tapeworm infection becomes more obvious. Massive tapeworm infestations are reported to have caused partial or complete intestinal blockages leading to death. Association of tapeworms and death could be attributed to secondary Enterotoxemia (pulpy kidney disease, overeating disease) as the result of slow passage of ingesta through the digestive system favoring proliferation of *Clostridium perfringens* type A, C&D bacteria, then production and absorption of toxins. A few studies over the years could not provide strong evidence that weight in lambs is affected by presence of tapeworms. However, in a few recent studies in herds with known history of severe recurrent tapeworm infections where owners reported clinical signs of diarrhoea, abdominal pain, and depression, treated lambs showed increased weight gains compared to untreated animals.

Diagnosis: a presumptive diagnosis of tapeworm is based on the presence of segments in faeces or through examination of dung using standard floatation procedure. Tapeworm eggs are triangular in shape. The presence of tapeworm eggs is no indication of the severity of the infection present. Tapeworms are common findings in sheep at post-mortem examination with no apparent ill effect.

Treatment: dewormers are available in various formulations and variety of forms for administration. The most important aspect of using dewormers is to conserve their effectiveness. This can be achieved by using them as little as possible and only when infection levels dictate. Most deworming schedules vary between regions and different parasite species.

Because tapeworm segments are visible in the faeces, owners are often concerned. Veterinarians on the other hand, consider this less worrisome because tapeworms usually have little pathologic effect. There is some evidence that weight gains in lambs are improved by treatment. Many sheep farmers in South Africa claim removal of tapeworms improved their lamb condition and use anthelmintics intensively to control it. This had resulted in extensive resistance to combination anthelmintics. Praziquantel is effective against both the adult and immature stages of tapeworms. Benzimidazoles only kill the head and segments. Albendazole is considered to be the most effective of the Benzimidazole drugs, while it usually is less effective than Praziquantel. Care should be taken in selecting a product where tapeworm control is required since many of the broad spectrum wormers (e.g. "Mectins") have no activity against tapeworms. Using a worm remedy that treats both tapeworms and roundworms (GIN) in areas where tapeworm is a problem saves money. Remember that the GIN are considered more important than tapeworms. Just like GIN, the best strategy for tapeworm is to learn to live with the parasite and aim for control. In areas with a known history of recent tapeworm infections, a treatment in spring when segments appear in faeces will help reduce the level of infected mites for the grazing season. A treatment in autumn may reduce the number of mites overwintering with the tapeworm larvae. Farmers should consult with their veterinarians for selection of appropriate products in their area.

Prevention and Control: strategic preventive deworming and treatment program must consider methods for minimizing pasture contamination, including delayed grazing in the morning and nightfall where mites are more active, pasture rotation, and treatment of older animals, particularly ewes. Thoughts should also be given to how tapeworm control could be integrated with other worming activities as discussed under treatment options. Studies showed increase in weight gain where lambs were given pre-weaning drenches for tapeworm in addition to GIN control. There is need to balance these benefits against other possible costs of production. Lambs naturally develop immunity to tapeworm regardless of treatment. Concerns are also raised for the risks of preventive treatment of tapeworms, that of encouraging anthelmintics resistance against GIN using products containing mixtures such as levamisole, abemectin, moxidectin, etc. together with Praziquantel. Using a single Praziquantel product for tapeworm as preventative should be considered where available.

Selected Bibliography:

Burnell M. (2005). Tapeworm control in sheep. Vet Rec.157:180

Beef + Lamb New Zealand. (2011). Probing further the effects of tapeworm and impact of a pre-weaning drench in lambs.

<http://www.beeflambnz.com/Documents/Farm/Probing%20further%20the%20effects%20of%20tapeworm%20and%20impact%20of%20a%20pre-weaning%20drench%20in%20lambs.pdf>

Dever ML, Kahn LP, Doyl EK. (2015). Removal of tapeworm (*Moniezia* spp.) did not increase growth rates of meat-breed lambs in the Northern Tablelands on NSW. Veterinary Parasitology. 208:190-194.

Elliott DC. (1984). Tapeworm (*Monieziaexpansa*) in sheep: anthelmintic treatment studies to assess possible pathogenic effects and production loss in young infected animals in the field. New Zealand Veterinary Journal. 32:185-188.

Rao DB. (2011). Monieziasis and its association with the pathogenesis of Enterotoxaemia in small ruminants.IntasPolivet. 12:73

Strobel H, Ponte, M de., et all.(2013). Comparison of three different treatment schedules for praziquantel (Cestocur®) in the treatment of Tapeworm Infections (*Moniezia* spp.) and their impact on body weight gain in a German sheep flock. Parasitol Res. 112:S139-147.

Schoenian S. (2013).Tapeworms: problem or not? <http://www.sheepandgoat.com/articles/tapeworms.html>

Schoenian S. (2014). Tapeworms and Gut Motility.<http://www.sheepandgoat.com/articles/gutmotility.html>

Van Schalkwyk PC, Van Wyk JA, et all. (2005). Tapeworm control in sheep. Vet Rec. 157: 298-299

Zajac A. (2014). Disgusting Tapeworms.<http://www.wormx.info/#!/tapeworms/crx6>