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Popular Article

Rumen flukes in ruminants

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Rumen fluke of ruminants is commonly known as Paramphistomes. It has other synonyms like amphistomes, stomach fluke and conical flukes. Paramphistomes are parasites that mostly infect sheep and cattle. The flukes are often found in small numbers but only seriously affect livestock under certain conditions, in heavy infections, and in certain growth stages. Adult flukes in the rumen or reticulum, for instance, are not known to cause clinical disease. On the other hand, severe infections have been known to harm the rumen. Severe illnesses and even death can result from heavy infections of the upper small intestine with immature flukes. The adult parasites are pear-shaped, pink or red, up to 15 mm long generally found in rumen and immature forms are 1–3 mm long and seen in the duodenum.

Life cycle

The life cycle of the stomach fluke is intricate and requires an intermediary host to be completed. The intermediate hosts are planorbid snails. These are small, flat snails from 2–5 mm in diameter. The stomach fluke species that affect ruminants in India is *Paramphistomum Cervi*, which is spread by the snails *Indoplanorbis*, *Gyraulus*, *Lymnaea* and *Bulinus*. These snails are found in permanent and temporary watercourses, irrigation channels, swamps, dam edges and depressions. In these environments, they are typically found attached to vegetation.

Adult stomach flukes live in the rumen and reticulum of cattle, sheep and goats. In faeces, the eggs are passed. Planorbid snails serve as the intermediate host for the larvae once they hatch in a moist environment. Larval development is completed in the snail, and the next stage, the cercariae, leave the snail and attaches to vegetation where it encysts (metacercariae).

The immature fluke ex-cysts and adheres to the walls of the small intestine when ruminants graze the vegetation. It later migrates to the rumen and reticulum to become an egg-producing



adult. Within 4-6 weeks of infection, young flukes migrate to the rumen and typically show no clinical symptoms. Egg production begins soon after the fluke enter the rumen.

When there are severe infections, the development of the young flukes is slowed down. They can remain in the small intestine for over four months and cause serious illness that is linked to the lining of the small intestine being destroyed. Up to 72,000 immature flukes may be found in the small intestine during a severe outbreak.

Clinical signs

Most livestock have only light stomach fluke infections. They exhibit no symptoms of illness from either a small number of immature fluke or adult fluke. Heavy infections with the immature fluke may cause decreased appetite, listlessness and weight loss. These infections may cause fluid, foul-smelling diarrhea, dehydration, and even death. Mild infections with the immature fluke can result in illness-thriftiness, decreased milk production, and decreased weight gain.

Immature fluke lives in the small intestine of ruminants where they attach themselves to the intestinal lining with powerful suckers. In large numbers, they destroy part of this lining and cause acute inflammation of the intestine. Death can occur in severe infections.

Immunity

Cattle, sheep and goats develop resistance after exposure to the parasite. This immunity protects the animal against the massive infections of immature fluke that causes the most problems. Young animals are the most susceptible. Adult animals can still be affected, particularly if they have had no prior exposure to the parasite or are debilitated by other problems, such as unbalanced nutrition.

The risk of disease is increased when previously unexposed cattle are moved to areas where massive exposure may occur. This is especially important in drought times.

Diagnosis

For diagnosis post-mortem findings, history, clinical symptoms, are useful. This disease should be differentially diagnosed with roundworm infections and liver fluke infections in cattle and sheep, and copper deficiency in cattle. Similar symptoms can also be seen in various bacterial, viral, and protozoal infections as well as plant and chemical poisoning.

A careful examination of the small intestine with a magnifying glass or special microscope is required to confirm a diagnosis. Eggs in faeces are only a sign of adult fluke presence; they are not a useful diagnostic tool for acute disease outbreaks.

Treatment & control

Resorantel, rafoxanide, oxiclozanide, niclofolan and a variety of other anthelmintics have



been used for the treatment of paramphistomes but these anthelmintics may vary in their efficacy against the adult and immature stages.

Some reports on the efficacy of niclofolan have been variable, but Boray (1969) demonstrated that niclofolan (6 mg/kg) was 96% and 43% effective against immature and mature amphistomes. Resorantel (65 mg/kg) is reported to be highly effective (100%) against adult amphistomes and 63% effective against the immature stages in calves (Gaenssler 1974).

Although there are practical limitations, the following measures provide some control of stomach fluke.

- Drain the affected areas.
- Fence off affected areas.
- Provide alternative water sources.
- Treat stock with drenches effective against stomach flukes.

Serious outbreaks may be prevented if pastures with a natural water supply are grazed only in spring and early summer. Grazing in late summer, early fall, and early winter should be avoided. If wet pastures are grazed continuously, young weaner calves and lambs should not be grazed together with adults.

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