

Liver fluke – the basics

Stephen Love

Veterinarian / State Coordinator, Internal Parasites,
Armidale

Note

This Primefact provides a brief overview of liver fluke. For more detailed information including images, see NSW DPI Primefact 446, 'Liver fluke in sheep and cattle', by Dr JC Boray (2007).

Introduction

Liver fluke (*Fasciola hepatica*) is a parasite affecting a range of livestock and other species. Final hosts in which it can develop to sexual maturity include livestock such as sheep, cattle, horses, pigs, goats, alpacas and deer. Other species include kangaroos, wallabies, rabbits, and humans. People can be infected by eating water cress from creeks in fluke-infested country.

Millions of sheep and cattle graze pastures where liver fluke is endemic, mainly in south-eastern Australia.

Liver fluke costs millions of dollars each year in lost production, stock deaths, and costs of treatment and prevention. As with many worms, most of the economic cost is associated with production losses from infections that may not be apparent.

Distribution of liver fluke

Liver fluke occurs in regions, and areas on individual farms, where the environment suits the fluke eggs, the intermediate host snails and the larval fluke – such as springs, slow-moving streams with marshy banks, irrigation channels and seepages.

Liver fluke is limited to the higher rainfall (>600 mm per year) areas of NSW (typically the tablelands in the eastern part of the state, and nearby coastal areas to the east and slopes to the west), Victoria and Tasmania, and to small areas in Queensland and South Australia. Liver fluke may also be found in irrigation areas.

Lifecycle

Within the liver of affected final hosts, adult fluke in bile ducts produce eggs which are passed in the faeces. The eggs hatch in wet areas on pasture when mean daily temperatures are over 10°C. Larvae (miracidia) invade the intermediate hosts, which are lymnaeid snails, most commonly *Lymnaea tomentosa* in Australia and New Zealand. Once inside the snail, larvae develop and multiply as sporocysts, rediae and cercariae.

The tadpole-like cercariae leave the snails, swimming until they encyst on vegetation, forming metacercariae, the infective stage of liver fluke. Grazing animals ingest the metacercariae, which release immature flukes in the small intestine. The young flukes penetrate the intestinal wall, make their way to the liver, and then migrate through the liver tissue for 6–7 weeks before entering the bile ducts to become adults. Egg production starts 8–10 weeks after infection. Adult fluke can live for several years and produce over 20,000 eggs per day.

Liver fluke disease (fasciolosis)

Liver fluke disease can be acute, sub-acute or chronic, depending on the size of the infection and how quickly it is acquired. Disease is due to haemorrhage and tissue damage from migrating immature fluke, and from damage to bile ducts and blood loss due to adult fluke.

Acute fasciolosis. Possibly causes death, with or without abdominal pain, jaundice and anaemia.

Sub-acute fasciolosis. Causes jaundice, ill thrift, anaemia, and possibly death after several weeks.

Chronic fasciolosis. The most common form; slowly developing clinical signs include anaemia, loss of appetite, and 'bottle jaw' (submandibular oedema).

Black disease. This is an acute and fatal liver disease of ruminants such as sheep and cattle, which is caused by the bacterium *Clostridium novyi*, usually in association with migrating liver fluke. It is preventable by vaccination.



Treatment and prevention

Treatment is by use of flukicides – anthelmintics effective against liver fluke.

Control is by means of strategic treatment with flukicides and grazing management.

As 'flukey' areas are confined to certain parts of a farm, grazing of these areas can be managed or even precluded. For example, grazing by the most vulnerable stock (sheep, goats and young cattle) can be minimised.

Strategic treatments can help to reduce liver fluke populations. One to three treatments may be needed per year, depending on the severity of the problem. The most important treatment is the April-May treatment, and a highly effective flukicide (one based on triclabendazole) should be used.

Regular monitoring should be undertaken. Testing options include:

- liver fluke egg counts, using faecal samples, or
- an antibody test (ELISA) using blood samples or, in the case of dairy cattle, milk samples.

Acknowledgment

This Primefact is largely drawn from the Primefact by Boray (2007).

References and further reading

Boray JC (2007). *Liver fluke in sheep and cattle*. Primefact 446 (February 2007), NSW Department of Primary Industries. Retrievable from www.dpi.nsw.gov.au/agriculture/livestock/sheep/health/internal/liverfluke-disease-sheep-cattle

Cole VG (1986). *Helminth parasites of sheep and cattle. Animal Health in Australia*, Volume 8. Australian Agricultural Health and Quarantine Service, Department of Primary Industry, Canberra, p.255.

Love, SCJ & Hutchinson, GW (2003). 'Pathology and diagnosis of internal parasites of ruminants' in *Gross Pathology of Ruminants*, Proceedings 350, Post Graduate Foundation in Veterinary Science, University of Sydney, Ch. 16, pp. 309–38. Retrievable from www.dpi.nsw.gov.au/__data/assets/pdf_file/0003/34608/lh-pathol-int-para.pdf

Wormboss. wormboss.com.au (Australian Wool Innovation and Australian Sheep Industry Cooperative research Centre).

© State of New South Wales through NSW Department of Primary Industries 2008. You may copy, distribute and otherwise freely deal with this publication for any purpose, provided that you attribute NSW Department of Primary Industries as the owner.

ISSN 1832-6668

Check for updates of this Primefact at:
www.dpi.nsw.gov.au/primefacts

Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (September 2008). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of New South Wales Department of Primary Industries or the user's independent adviser.

Job number 8866