

Hydatids – the basics

Stephen Love

Veterinarian / State Worm Control Coordinator,
Armidale

Note

This Primefact provides an overview of hydatids. For more detailed information, see Primefact 475, *Hydatids – you, too, can be affected* (2007)

Introduction

In Australia, hydatid disease (echinococcosis, hydatidosis) is caused by the hydatid tapeworm (*Echinococcus granulosus*) which infects dogs, dingoes and foxes. Another species – *E. multilocularis* – fortunately does not occur in Australia or New Zealand.

At its intermediate stage, cysts form in the internal organs of a number of animals. Humans can also be intermediate hosts, with serious health consequences.

Losses from hydatid disease in livestock arise from the downgrading of edible meat by-products because of hydatid cysts.

Control is by preventing or eliminating hydatid tapeworm infections in the final hosts – dogs, foxes and dingoes. Controlling hydatids will also help to control sheep measles, caused by a tapeworm with a similar lifecycle.

Hydatid lifecycle

The *E. granulosus* tapeworm consists of 3-4 segments and is up to 6 mm long. Thousands of these small tapeworms can inhabit the intestines of a dog without ill effect. Tapeworm segments containing eggs are periodically shed in the faeces. The eggs, which are resistant to weathering, are scattered by wind and water.

Susceptible intermediate hosts swallow the eggs. Such hosts include sheep, pigs, goats, camels, deer, cattle, horses, kangaroos and wallabies, and humans.

Swallowed eggs – for example, from pasture or, for humans, unwashed hands or vegetables – yield embryos which traverse the gut wall and are transported to various tissues, usually the liver or lungs, but sometimes the brain. Hydatid cysts (fluid filled sacs) then develop. The next generation of tapeworm heads develop within these cysts.

The cycle is completed when final hosts (dogs, dingoes, foxes) consume tissues with hydatid cysts or contaminated with cyst fluid.

The sylvatic (wildlife) life cycle may involve dingoes, dogs and foxes as final hosts and kangaroos and wallabies as intermediate hosts.

Controlling hydatids

Simply, controlling hydatids involves preventing or eliminating hydatid tapeworm infections in final hosts, notably dogs. To prevent the disease in humans, hygiene is important.

Feed only manufactured dog food

Even cooked meat or meat by-products from stock slaughtered on-farm may contain viable hydatid tapeworm heads from ruptured cysts.

Prevent access to offal or dead stock

Dogs on farms and in public places should be restrained or closely supervised.

Of the intermediate hosts, sheep provide the greatest risk because they have the largest proportion of viable cysts when infected.

Eliminate infections

The only suitable tape wormer for treating dogs is praziquantel. This active ingredient is found in many dog wormers (check the label).

When treating potentially infected dogs, take great care in disposing (by deep burial, or burning) of droppings for three days after treatment.

Dogs at on-going risk of infection will need to be treated with praziquantel every 6 weeks.



Hygiene

As with many zoonoses (diseases transmissible between animals and humans), attention to hygiene can markedly reduce the risk of infection.

Always thoroughly wash your hands before putting your hands near your mouth (for eating, cigarette smoking, etc.), especially after handling dogs or being in potentially contaminated areas such as around kennels. Wash vegetables and fruit before eating or cooking them. Teach your children to do the same, by instruction and by example.

Cysts caused by other larval tapeworms

Hydatid cysts need to be distinguished from other larval tapeworms. See Table 1 on page 3.

Acknowledgement

This Primefact is largely based on Primefact 475, *Hydatids – you, too, can be affected*, by King and Hutchinson (2007).

References and further reading

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.

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

Cysts of larval cestodes (tapeworms) of sheep and cattle

See Table 1 on page 3 for a detailed list of cysts of larval cestodes (tapeworms) of sheep and cattle.

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Table 1. Cysts of larval cestodes (tapeworms) of sheep and cattle

Cyst/larval stage	Intermediate hosts	Location	Size	Appearance	Adult tapeworm, length, location	Definitive host
Hydatid cyst (<i>Echinococcus granulosus</i>)	Sheep, cattle, goat, pig, wallaby, kangaroo, human, deer, camel, wombat.	Liver, lung, kidneys, spleen, heart, brain, bone.	4–5 mm at 3 months, 20 mm at 6 months.	Viable cysts enclosed within laminated fibrous capsule and embedded in substance of affected organ. If fertile, contain many scolices ('hydatid sand'). Degenerated cysts contain caseous material that 'shells out'.	<i>Echinococcus granulosus</i> , 4–6 mm (3-4 segments), small intestine.	Dog, dingo, fox.
Sheep measles (<i>Cysticercus ovis</i>)	Sheep, goat.	Heart, diaphragm, masseter (chewing) muscles, oesophagus, all striated (skeletal) muscle.	3–6 mm at 7 weeks. Oval shape, up to 10 mm long.	Viable cysts contain fluid and a single protoscolex. Dead cysts become calcified.	<i>Taenia ovis</i> , 2 m, small intestine.	Dog (dingo very occasionally, fox rarely).
Beef measles (<i>Cysticercus bovis</i>)	Cattle, buffalo, deer, giraffe.	Heart, tongue, masseter (chewing) muscles, diaphragm, all striated muscle.	Variable in size: 2–20 mm, average 5 mm. Fully developed in 16 weeks.	Viable cysts contain fluid and a single protoscolex. Degenerated cysts become caseous and calcified.	<i>Taenia saginata</i> , 4–10 m, small intestine.	Human.
Bladder worms (<i>Cysticercus tenuicollis</i>)	Sheep, cattle, goat, pig.	Liver and abdominal cavity.	Average 50 mm; range 1–60 mm.	Cysts loosely attached to surface of viscera. Contain clear, jelly-like fluid and a single large scolex.	<i>Taenia hydatigena</i> , 3 m, small intestine.	Dog, dingo.

Note: In addition to the tapeworms listed above, there are a number of tapeworms commonly found in dogs, foxes and dingoes that do not involve livestock or humans as intermediate hosts. These include *Taenia pisiformis* and *T. serialis* (intermediate hosts: rabbit, hare) and *Dipylidium caninum* (intermediate hosts: flea, and possibly the biting louse).

This table is modified from Love and Hutchinson (2003), adapted from Cole (1986).