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HYDATID DISEASE IN WESTERN AUSTRALIA

By G. de CHANÉET, Veterinary Parasitologist

BECAUSE hydatid disease is a disease of humans as well as animals, every dog owner should be aware of the conditions that perpetuate hydatids and the methods of control.

The incidence of hydatids in Western Australia in the past has not been high when compared to the Eastern States. However, the increase in sheep numbers over recent years, together with the intensification of farming methods, may lead to a rise in incidence unless stock owners, particularly sheep farmers, take steps to control the disease.

The cause of hydatid disease

Hydatid disease is the presence of the intermediate or larval stage of the dog tapeworm Echinococcus granulosus in the tissues of the host animal.

The adult tapeworms, which are about one tenth of an inch long, live in the small intestines of dogs (and possibly foxes and dingoes).

Eggs produced by these adult tapeworms are passed in the excreta of the dog. These eggs may develop into the larval stage of the parasite in a great variety of animals including pigs and horses, but sheep and cattle are the most frequently affected.

Humans can be infected in the same way as sheep or cattle.

This larval stage takes the form of a cyst that may be up to several inches in diameter. This cyst is a hydatid. The cysts cause disease by their mechanical interference with the organ in which they are present. Thus, a small cyst in the liver may not be of importance, but the same sized cyst in the brain could be fatal.

Life cycle

(1) The adult tapeworm, in the intestine of the dog, sheds segments containing eggs.

(2) The eggs are voided in the dog's faeces.

(3) The eggs are eaten by sheep or cattle (or humans) and hatch into embryos in the first part of the small intestine of these animals. These are called intermediate hosts.

(4) The eggs burrow through the wall of the intestine and into blood vessels; they are then distributed throughout the body in the bloodstream. Most are trapped in the liver.
(5) The embryos grow into cysts (or hydatids), containing up to thousands of scolices (the heads of future adult tapeworms).

(6) A dog eats an hydatid, and the scolices grow into adult tapeworms in its small intestine.

Some hydatids do not contain scolices, and are called sterile. About 80 to 90 per cent. of hydatids in cattle are sterile, while only a minority are sterile in sheep. This means that sheep are the most important intermediate hosts for the disease.

The disease in Western Australia

Eastern States experience shows that the disease occurs most commonly where:

- rainfall exceeds 100 points per month
- the mean maximum temperature is below 80° F. for six months or more

It could be expected that hydatids would be most common in the cool, wet South-West. Abattoir inspection have shown this to be the case.

The centres to which hydatid disease has most frequently been traced (from abattoirs) are:

Manjimup, Margaret River, Boyanup, Brunswick, Waterloo, Bridgetown, Harvey, Busselton, Capel, Mt. Barker, Albany and Waroona.

The disease in humans in Western Australia

A recent limited search of hospital records in W.A. has shown that 45 known cases occurred in the period 1957-67. Seven of these were in children under the age of 11 years. Nineteen of the cases were in urban dwellers, the other 26 being country people. The patients had hydatids in the liver in 58 per cent. of cases and in the lungs in 40 per cent. *

Thirty-five of the affected people underwent surgical operations for removal of cysts, four of these needing further surgery because of recurrences from four months to two years later.

*Reported by G. R. Stein and D. J. McCully, Medical Journal of Australia 1 : 848, April, 1970.
Scolices (heads of future tapeworms) in a hydatid cyst, about 150 times actual size. Each cyst may contain thousands of scolices.

From these figures it was calculated that the number of persons suffering hydatids in any one year in W.A. is one per 250,000. This figure is a minimum, because not all hospitals in the State were examined, and because suspect cases that were not definite were excluded.

If the rural population is considered the incidence is somewhat higher at one case per 81,000 head of population per year.

This suffering, illness, and sometimes death, can be easily avoided.

Control

Control must be based on the prevention of infestation of dogs with the adult tapeworms. Treatment of dogs is not completely effective.

All the following rules should be strictly adhered to:

Do not feed dogs raw offal

If it is desired to use offal as a food, then it MUST be boiled for at least 40 minutes. Offal includes liver, lungs, stomach, intestines, etc. It is preferable not to feed offal to dogs at all, even after boiling.

To ensure that dogs do not inadvertently eat offal, the following measures should be employed.

Dispose of carcasses in paddocks, either by burning or deep burial.

Keep dogs under control at all times, avoiding the possibility of dogs becoming infected from scavenging.

Use a dog-proof killing area for home killing.

Dispose of unwanted offal by burning or deep burial.

Treat dogs regularly

Treatment of dogs, although it cannot be relied on as a total control measure, is an adjunct to control. Treat dogs regularly every one to three months, using bunamidine, ("Scolaban," Burroughs Wellcome).

Prevent human infection

Although prevention of human infection can never be guaranteed, the rate of infection can be greatly reduced by common sense in handling dogs.
Never let children touch or play with farm dogs. Neither should children be allowed near the dogs' sleeping quarters. Wash hands thoroughly after handling dogs of any kind.

**FACTS ON HYDATIDS**
- An infected dog cannot be recognised by clinical symptoms.
- Dogs only become infected from eating cysts in offal.
- Lightly cooking offal has not been found to be successful in controlling hydatids in New Zealand and Tasmania. It is preferable to feed dogs prepared foods such as pellets, biscuits or tinned foods. If offal is to be fed, it must be boiled for at least 40 minutes.
- The infective eggs are very hardy, and may survive for months in kennels, on a dog's coat and so on.
- A known infected dog cannot be guaranteed free after treatment.
- Humans get the disease from infected dogs.
- The only treatment in humans is surgery, and this may not always be successful, particularly in longstanding cases where there is more than one cyst.
- The disease is not as yet common in W.A. However, with intensification of sheep husbandry it could become so. It can be virtually eradicated now if the control measures outlined in this article are followed.

Infected kangaroo lung. The section on the right is a mass of cysts.