Hydatid disease in Western Australia

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**HYDATIDS IN HUMANS**

Fortunately the incidence of hydatids in humans is relatively low in Western Australia. However, climatic conditions in the South-West are favourable for hydatids, and with sheep numbers increasing rapidly hydatids could become a real problem in this part of the State. To avoid this farmers must be aware of the threat of hydatids and take full precautions against them.

These graphic pictures of hydatid cysts in humans appeared in the *Tasmanian Journal of Agriculture*.

There's no easy way of removing an hydatid cyst. It always means a major surgical operation.

Sixty per cent. of all hydatid cysts in humans are in the liver. Thirty per cent. are in the lung. Ten per cent. are found in any other part of the body such as kidneys, bones, spine, heart or brain.

The hydatid worm is carried only by dogs, and humans become infected only after they have taken in an hydatid tape worm egg passed by a dog.

Dogs become infested with hydatid worms only if they eat a cyst, found commonly in the internal organs of sheep.

There would be NO hydatid cysts in humans and NO operations and NO hydatid deaths if all dog owners would—

- Keep their dogs under control.
- Feed them on carcass meat only or biscuits, definitely not raw offal.

*Colour plates by courtesy of the Tasmanian Journal of Agriculture.*
Because hydatid disease is a disease of humans as well as animals every consideration must be given to its control and to the prevention of any possible increase in incidence.

The incidence of hydatids in Western Australia has not, in the past, been very high. However, the great increase in sheep numbers which has taken place in recent years and which is expected to continue for many years to come, will produce a situation where it could be expected that the incidence of the disease will rise unless stock owners, particularly sheep owners, take appropriate steps to control the tapeworms responsible for the disease.

Cause of the disease

Hydatid disease is caused by the presence of the larval or bladder stage of the parasite *Echinococcus granulosus* in the tissues of the host animal.

*Echinococcus granulosus* is a small inconspicuous tape worm not more than a quarter of an inch long, which lives in the small intestine of the dog, fox, dingo and, in rare instances, the cat. These are the so-called final or definitive hosts.

Tapeworm eggs which are produced in and excreted by the host animals, may develop as cysts in almost any animal species. Sheep and cattle are most frequently affected, but cysts may also develop in the pig, the horse, and unfortunately man. These are known as the intermediate hosts.

Life cycle

(1) The adult worm, in the small intestine of the dog, fox, dingo and cat (rarely), lays eggs.

(2) Eggs are passed in the faeces and ingested by sheep, cattle, pigs, horses, or man.

(3) Eggs hatch in the duodenum to form "hexacanth" embryos.

(4) The embryos are carried by the blood stream to predilection sites, usually the liver and the lungs; however, any other organ may be invaded. Hydatid cysts develop in the invaded organs.

(5) The inner wall of the cyst or germinal layer produces a number of brood capsules. Each brood capsule may contain numerous scolices, which are the heads of the future adult tapeworms of the final host.

Some of the hydatid cysts do not produce scolices or "heads" and these are therefore "sterile" cysts and are unable to transmit the infestation to animals such as dogs which ingest them.

The proportion of hydatid cysts which are sterile, varies greatly in the various intermediate hosts. Thus 80 to 90 per cent. of cysts in cattle are sterile so that cattle are mainly "dead end" hosts and are relatively unimportant in the epidemiology of hydatid cysts. On the other hand, the great majority of cysts in sheep are "fertile" and this, together with the far greater availability of sheep viscera for the feeding of dogs or as prey for predators, makes sheep extremely important in the survival of the disease in nature.

Climate

Climate has an important influence on hydatid disease. It has been found in the Eastern States that survival of hydatid disease in a district requires—

(a) a rainfall of more than 100 points per month;
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(b) a mean maximum temperature below 80°F for a period of six months or more.

Neither tapeworm eggs nor hydatid cysts survive exposure to hot weather. In other words hydatids are most prevalent where there is a moderately high rainfall and moderately low maximum temperature.

**West Australian survey**

A limited hydatid disease survey has been carried out over the past two years by the meat inspection staff at export abattoirs in Western Australia.

Efforts to trace the origin of affected stock killed were usually unsuccessful because of the difficulty of reading wool brands of sheep and firebrands in cattle. It is hoped that alternative methods of identification now being tested will make it possible to trace the disease from abattoirs back to the property of origin in the not-too-distant future.

Nevertheless it was occasionally possible to establish that a particular line of stock affected with hydatid disease had been purchased at a particular sale or property.

The centres to which hydatid disease was most frequently traced were: Manjimup, Margaret River, Boyanup, Brunswick, Waterlo, Bridgetown, Harvey, Busselton, Capel, Mount Barker, Albany and Waroona.

Other centres to which hydatid disease was traced were (in alphabetical order): Abba River, Armadale, Beverley, Boyup Brook, Bunbury, Chowerup, Collie, Cookernup, Cowaramup, Cranbrook, Damboring, Dandalup, Dandaragan, Dardanup, Dininup, Donnybrook, Dowermun, Ferguson, Katanning, Kirup, Kojonup, Kukerin, Meckering, Metricup, Moora, Namban, Nannup, Narngulu, Narrogin, Northampton, Nullagine, Ongerup, Perillup, Pinjarra, Quindalup, Ravenstarpe, Rocky Gully, West Wagin, Williams, Witchcliffe, Yarloop, Yelbeni, York.

Compared with New South Wales, Tasmania and Victoria, the incidence of hydatid disease in Western Australia is very low. However, the survey has pointed to the fact that a close watch on the South-West of Western Australia will be necessary to ensure that the incidence remains at the present low level, or is reduced even further.

**CONTROL OF HYDATID DISEASE**

**Treatment of dogs**

Arecoline is the drug used for treatment. A proprietary preparation—"Tenoban"—is easily administered and the directions for use are provided with the tablets. It is not necessary to starve dogs before treatment. Toy dogs should be treated under veterinary supervision.

Arecoline hydrobromide is the drug which is still favoured by many. Before using this drug however, a veterinarian should be consulted, as in some instances arecoline hydrobromide may cause violent reaction such as vomiting or collapse.

It is recommended that dogs should be given only milk for 24 hours and then starved for 24 hours before administering arecoline hydrobromide.

Frequency of treatment depends upon whether or not the dog has had access to raw offal affected with hydatid cysts. If there is any doubt in this regard dogs should be treated every eight weeks.

Dogs should never be fed raw offal. Offal should be boiled for at least ten minutes before feeding to dogs, to destroy the hydatid cysts.

Incidentally, both of these steps destroy bladder worms and sheep measles as well.
BREAK THE LIFE CYCLE

Boil offal for 10 minutes before feeding to dogs

Dose dogs every eight weeks for tapeworm

Prevention of infection in man

Man contracts hydatid disease by ingesting the tapeworm eggs from dogs. These eggs are not visible to the naked eye and may be contained in dust in the kennel area, in the dog’s coat, on vegetables, and so on.

It is essential therefore that people should wash thoroughly after handling country dogs. Children should never be allowed to play with farm dogs (except under supervision) or even play in the kennel area. Hygiene rudiments should be taught early.

Tapeworm eggs are resistant to most adverse environmental conditions. Heat is the exception; eggs are killed by boiling water almost immediately. Therefore, if water supplies are likely to be contaminated by dog faeces, the water should be boiled before consumption.

Dog faeces should be burned, or buried to a depth of 6 feet.

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