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Echinococcus multilocularis: Five things for clinicians to know

1 *Echinococcus multilocularis (E. multilocularis)* is a small tapeworm that can normally be found in canids (coyotes, foxes, dogs) and rodents.

Wild and domestic canids (and some felines) are definitive hosts that harbour adult tapeworms in their intestinal tract. Eggs that are shed in feces are immediately infective. Rodents that ingest eggs can develop tissue cysts, predominantly in the liver, that behave like tumours. Definitive hosts become infected by ingesting infected rodents.

2 Infection of humans can occur following ingestion of *E. multilocularis* eggs.

Ingestion of eggs can occur through oral ingestion of the feces of an infected definitive host (e.g. canids). Humans are accidental hosts but can develop **alveolar echinococcosis,** the same types of tumour-like lesions that occur in intermediate hosts (such as rodents). To date, there have been no known cases of locally-acquired infection in humans.

3 Alveolar echinococcosis is a slowly progressing disease, but can be serious if untreated and is often difficult to treat.

Alveolar hydatid cysts behave like a tumour, and after first developing in the liver may spread elsewhere in the body. They have a clinical incubation period of 5-15 years.

Presenting signs and symptoms are consistent with hepatic disease, including malaise, weight loss, upper right quadrant pain and jaundice. Untreated, case fatality can be as high as 90% within 10 years of the onset of symptoms and virtually 100% by 15 years.

4 *E. multilocularis* may now be endemic in wild and domestic canids in Ontario, creating the potential for human exposure.

Multiple cases of *E. multilocularis* infection have been identified in domestic canids in southern Ontario. These cases originated in the province, suggesting that *E. multilocularis* has become established in wild and domestic canids in Ontario. The parasite has also been found in wildlife in southern Ontario. No locally-acquired human cases have been identified to date.

Actions to reduce the risk of human exposure include avoiding contact with feces from wild and domestic canids and good hand hygiene practices after potential contact. Monthly deworming of dogs with antiparasitics should be considered for dogs known to hunt or ingest rodents. Antiparasitics that are effective against *E. multilocularis*, such as praziquantel, should be used.

5 Persons with exposure to a domestic canid with confirmed shedding of *E. multilocularis* eggs should be investigated serologically. Prophylaxis should be considered in persons with a high likelihood of egg ingestion and with serologic evidence of infection.

Because of the long incubation period and typical severity of disease by the time of diagnosis, proactive measures to identify exposure and early infections are indicated. Early diagnosis and treatment with albendazole improves life expectancy significantly. Treatment is indicated in individuals with serological evidence of infection. An assessment for the need for serological screening should be performed by someone with familiarity with *E. multilocularis*. Serological testing is performed in Switzerland. Approval by the Public Health Ontario Laboratory Parasitologist is required prior to submission.

Prophylaxis could be considered in individuals at high risk of having ingested eggs. This includes persons with household contact with dogs with confirmed shedding *E. multilocularis* eggs. This also includes persons with contact with dogs diagnosed with alveolar echinococcosis, because of the potential for previous or concurrent intestinal infection. High-risk exposures include handling dog feces without gloves or good hygiene practices (e.g. hand-washing), other forms of fecal-oral exposure and potentially oral-oral exposure.

For more detailed information, see the guidance document, *Echinococcus multilocularis: Information for Health Care Providers*.

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