

## Brucellosis and other diseases imported with dogs

In December 2018 an adult woman presented with a 2-month history of fever, chills, fatigue, weight loss, and headache. Her blood culture tested positive for *Brucella canis*. She helped transport rescue dogs from Mexico and the US to British Columbia, including a pregnant dog from Mexico that spontaneously aborted two stillborn puppies during transport. The dog tested positive for *B. canis* by immunofluorescent antibody test.

This was the first recorded human *B. canis* infection in BC. *B. canis* is rarely transmitted to humans; children and immunosuppressed individuals may be at higher risk. Four canine cases were documented in BC in 2017–18, all in imported dogs. The incidence is likely underestimated. Zero to two cases of human brucellosis are reported annually. Most are caused by *B. melitensis* acquired via contact with ruminants or consumption of unpasteurised milk in endemic countries.

Dogs are imported into Canada for personal, commercial, or compassionate reasons. In 2013–14, 197 Canadian rescue organizations imported 6189 dogs,<sup>1</sup> with actual numbers likely significantly higher. Some dogs carry diseases that are rare in Canada and may pose a risk to the public (Table).

Canine rabies is endemic in many countries. Dogs over 3 months old must have a certificate of rabies vaccination prior to entry into Canada.<sup>2</sup> There is a small risk of introduction of rabies with imported dogs as some are too young to be vaccinated and certificates are not routinely verified.

*This article is the opinion of the BC Centre for Disease Control and has not been peer reviewed by the BCMJ Editorial Board.*

Disease	Clinical picture
Brucellosis	Systemic illness (fever, headache, weakness, arthralgia, myalgia, anorexia, weight loss) and localized infection of joints, liver, CNS, heart, spleen, genitourinary system.
Rabies	Fever, anxiety, malaise followed by encephalitic (agitation, hydrophobia, hyperventilation, hypersalivation, convulsions) or paralytic forms followed by coma and death.
Alveolar echinococcosis	Asymptomatic period followed by larval mass formation in liver with local invasion of tissues and metastases to lungs and brain, mortality of 50% to 75%.

**Table.** Zoonotic diseases that can be introduced from imported dogs.

If a dog bites a person in BC and has been in an endemic country in the past 6 months, consult the local public health department to assess and manage rabies risk.<sup>3</sup>

*Echinococcus multilocularis* is a canine tapeworm that can cause alveolar echinococcosis in humans through inadvertent ingestion of eggs shed by infected dogs. The disease is very rare in southern Canada, though recently there have been reports of locally acquired *E. multilocularis* infection in dogs in BC, Alberta, and Ontario.<sup>4</sup> The emergence has been attributed to range expansion of infected imported dogs. Deworming in the country of origin or upon arrival decreases the risk.

Although severe, all these infections are preventable. Counsel patients to have imported dogs assessed by a veterinarian to ensure they are free of disease and adequately immunized. If a patient presents with compatible symptoms, consult an infectious diseases specialist or medical microbiologist to determine the diagnostic workup. When completing a requisition, it is important to indicate “exposure to rescue dog” on the form because special laboratory safety precautions are necessary to prevent laboratory staff from acquiring *B. canis*.

Ask the patient about animal exposure and its origin and report unusual diseases and zoonotic exposures to the local medical health officer.

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