

Detection of *Echinococcus multilocularis* in dogs from non-endemic Pomerania (northern Poland) using molecular methods

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Echinococcus multilocularis is the most dangerous parasite in the northern hemisphere and a causative agent of alveolar echinococcosis (AE), a disease fatal if improperly treated. Infection in humans is initiated by the ingestion of *E. multilocularis* eggs passed in stool by definitive hosts. Transmission of *E. multilocularis* occurs predominantly in a sylvatic cycle with wild canids, mainly foxes, as definitive hosts. In some areas, however, domestic dogs may play the same role in a synanthropic cycle.

Dog ownership is the most clearly established risk factor for acquiring human AE. In some regions of Poland, it may facilitate the transmission of the parasite to humans, thus, increasing the incidence of human AE. Dogs seem to contribute to the occurrence of human AE in China, while in Europe, their involvement is less clear. Research conducted in non-endemic areas of Poland in the early 2000s revealed no infected dogs or cats.

The aim of the study was to establish the role of dogs in *E. multilocularis* transmission in non-endemic Pomerania (northern Poland). In 2022, stool samples from 75 dogs of private owners and 228 dogs from eight shelters (303 samples total) were examined using nested PCR, semi-nested PCR and real-time PCR. The sensitivity of these methods was assessed. Positive samples were sequenced for confirmation.

The genetic material of the tapeworm was detected by more than one diagnostic method in seven samples. The highest sensitivity was achieved in nested PCR, followed by semi-nested PCR, and real-time PCR. Our preliminary results indicate that some AE cases in the studied area may be dog-related, but the incidence of *E. multilocularis* in dogs suggests low risk to humans.