

Molecular characterisation of *Echinococcus granulosus sensu stricto* cases in Polish patients

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Cystic echinococcosis (CE) is caused by the metacestode stage of the *Echinococcus granulosus* complex belonging to the family Taeniidae. CE is considered as one of the most important zoonotic parasitic diseases worldwide. In humans, the cysts develop in the liver (70%), lungs (20%), brain, heart and bones. This report characterizes the species of *Echinococcus* causing CE among patients who underwent surgery to remove a cyst.

Fragments of cysts were collected from nine patients postoperatively (2010–2015) in the Department of Zoonoses and Tropical Diseases of the Medical University of Warsaw. Genomic DNA was extracted using a commercial kit. The mitochondrial region of the NADH dehydrogenase 1 gene was amplified by PCR, then sequenced and analysed.

A total of nine samples were obtained from patients who underwent surgery to remove a cyst located in the liver (cases of six women and two men) and in the hip muscle (one case of a man). The majority of the cysts ranged in size from 3 cm to 7 cm in diameter; six out of nine cases were active (mostly type CE2), other cysts were sterile (type CE3). All isolates were diagnosed positive by amplification of the *nad1* fragment (~500 bp). All *nad1* sequences were deposited in GenBank with the accession numbers KT780293-KT780301. The sequences of seven isolates showed 100% identity to that of the porcine strain G7, designated *E. canadensis*, which plays a significant role as the main aetiological agent of human cystic echinococcosis in Poland. The sequences of two other isolates were identical to the sheep strain *E. granulosus* G1. These samples involved: - a female patient with liver CE, who was treated with albendazole; the patient had travelled to Turkey a few years previously, suggesting the possibility of infection with G1 strain abroad; - a male patient, operated in 2001 in Kazakhstan on account of hip muscle CE; after resettlement to Poland, colon cancer and small cysts in the left hip muscle were diagnosed. Considering the patient's history, the preliminary identification of *E. granulosus* G1 implies the case has been imported from Kazakhstan where the G1 strain is predominant. Regarding the G1 strain identified in two patients, it remains unclear whether these have been imported or indigenous cases.