

First case of *Echinococcus ortleppi* (G5) in wolf (*Canis lupus*)

Jacek Karamon, Małgorzata Samorek-Pieróg, Jacek Sroka, Ewa Bilaska-Zajac, Joanna Dąbrowska, Maciej Kochanowski, Mirosław Różycki, Jolanta Zdybel, Tomasz Cencek

Department of Parasitology and Invasive Diseases, National Veterinary Research Institute, Al. Partyzantów 57, 24-100 Puławy, Poland

Corresponding author: Jacek Karamon; e-mail: j.karamon@piwet.pulawy.pl

The purpose of the study was to confirm the presence of *Echinococcus* spp. tapeworms in wolves from south-eastern Poland. The material for the investigation was the intestines of 13 wolves from south-eastern Poland. The small intestines are divided into three equal segments. Each segment was tested separately using sedimentation and counting technique (SCT). The detected *Echinococcus* tapeworms were isolated and identified by PCR and sequencing (fragments of the *nad1* and *cox1* genes). Additionally, DNA isolated from wolf faeces in which the presence of *Echinococcus* tapeworms was found was tested using two additional PCR procedures. *E. granulosus* s.l. tapeworms were found in the intestines of one wolf using SCT method. The intestine was from a six-year-old male wolf killed in a traffic accident. Sixty one adult tapeworms were detected: 42 in the anterior part of the intestine, 14 in the middle and 5 in the posterior part of the small intestine. PCR for

cox1 and *nad1* gave specific products. Comparison with the GenBank database showed similarity to the previously deposited *Echinococcus ortleppi* (G5) sequences. Phylogenetic analysis of the available sequences showed very little variability within the species *E. ortleppi* (G5) and the identity ranged from 99.10% to 100.00% for *cox1* and from 99.04 to 100.00% for *nad1*. Moreover, only one of the two diagnostic PCRs used to examine the faeces of a wolf infected with *E. ortleppi* showed a product specific for *E. granulosus* s.l. This study revealed the presence of adult *E. ortleppi* tapeworms in a wolf for the first time. Moreover, it is the first confirmed case of *E. granulosus* s.l. in final hosts in Poland. This indicates the need to continue research in this area with the use of sensitive diagnostic methods in both wolf and dog populations. Especially considering the zoonotic threat – in Poland, the infection of *E. ortleppi* larvae has recently been confirmed in humans.