

The study on *Dirofilaria repens* expansion in Baltic countries

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INTRODUCTION. Dirofilariasis is fast-spreading disease of dogs and humans in Central Europe. Nematodes of genus *Dirofilaria* are vectored by mosquitoes, and domestic dogs constitute their main reservoir. As mosquitoes are considered as the most effective vectors, due to their enormously numerous populations, the risk of contracting filariae infection is high for humans and animals living in parasite endemic areas. In dogs *Dirofilaria* nematodes occur in two stages: as adult parasites inhabiting subcutaneous and connective tissue (*D. repens*) or the heart (*D. immitis*=heartworm) or as first larval stage, microfilariae, occurring in circulating blood. Symptoms of dirofilariasis in dogs can be diverse and in the case of *D. repens*, long-term asymptomatic infection may occur, constituting a constant source of infection for new generations of mosquitoes. The key issues in controlling zoonotic dirofilariasis are: 1) preventing infection in dogs and 2) treatment of infected dogs in recognized endemic regions, to eliminate microfilariae and the infection source for new generations of mosquitoes.

AIM. In present study we tested the hypothesis that *D. repens* has spread to the North, invading the Baltic countries and that this spread has been facilitated by the import of dogs from endemic countries. Molecular study was performed to determine the prevalence of *D. repens* in two sled dog kennels in Lithuania.

MATERIAL AND METHODS. Blood samples were collected from sled dogs during two international competitions held in 2017 in Lithuania and Poland (IFSS World Championship Dryland, Szamotuły-Koźle). Additionally, 31 dogs from two sled dog kennels were sampled at the place in Lithuania, Vilnius region. In total 71 blood samples were obtained from sled dogs representing 6 countries (Belarus, Poland, Lithuania, Latvia, Estonia, Finland). For the detection of *D. repens*, about 320 bp fragment of mitochondrial 12S rDNA was amplified with species-specific primers. Selected PCR products were sequenced, aligned and analyzed.

RESULTS. DNA of *D. repens* was detected in 27 out of 71 canine blood samples (prevalence 38%). Positive sled dogs were found in Poland, Lithuania, Latvia and Belarus. Dogs from Estonia and Finland tested negative. The highest prevalence of infection was recorded in one sled dog kennel in Lithuania (12 PCR-positive out of 15 examined dogs =80%). In total, prevalence of *D. repens* in Lithuanian sled dogs exceeded 58%.

CONCLUSIONS. This is one of the first studies reporting recent spread of *D. repens* to Lithuania and Latvia, countries believed to be free of *Dirofilaria*. Sled dog kennels, supplied by dogs originated from *Dirofilaria*-endemic countries (i.e. Czech Republic) may facilitate the settlement of new foci of dirofilariasis.

The study was funded by National Science Centre (NCN) grant OPUS no. 2017/27/B/NZ6/01691.