

Strongyloides stercoralis Infection in Dogs

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Strongyloides stercoralis (Rhabditida) is an intestinal nematode that primarily affects humans and dogs, more frequently reported in tropical and subtropical regions worldwide and considered rare in Central Europe. This parasite has a complex life cycle involving parasitic and free-living generations. Parasitic females are located in the small intestine mucosa and produce eggs by parthenogenesis containing first stage larvae (L1 rhabditoid), which hatch in the intestine and are shed with the faeces. In the environment they develop further either to infective third stage larvae (L3 filariform) or alternatively, to free-living female and male worms that mate and produce a generation of parasitic L3. Dogs get infected percutaneously or through the oral mucosa by penetration of L3; galactogenic transmission is also possible if the bitch is infected late in gestation or during lactation but it is considered not common. The infection can be asymptomatic; however, in cases of impaired immunity, large worm burdens, or in young dogs, life-threatening disease characterized by diarrhoea, malabsorption and bronchopneumonia may occur. Further, autoinfection, hyperinfection and extraintestinal dissemination (e.g. trachea, nasal cavities, lungs, oesophagus, stomach, cranial cavity) of the parasite were reported in dogs.

In recent years, molecular and epidemiological studies suggested that both dog-adapted and zoonotic populations of *S. stercoralis* may exist. During the last three years, several cases of clinical and subclinical *S. stercoralis* infection in dogs have been diagnosed at the Institute of Parasitology in Bern. The infection was diagnosed in dogs that had been imported into Switzerland from France, Belgium, Bulgaria, Italy and Croatia, and also in Swiss dogs related to the imported animals, showing that this parasite is currently circulating in Europe. Three of these clinical cases will be presented. All three dogs presented severe disease, characterised by harsh diarrhoea, dehydration, vomiting, respiratory and/or neurologic signs, and needed intensive care and hospitalisation. Faeces were analysed by three coproscopical methods including (i) the Baermann technique, which consistently identified the typical *S. stercoralis* first-stage larvae in both clinical and subclinical infections, (ii) the sedimentation-zinc chloride flotation and (iii) sodium acetat-aceticacid-formalin concentration (SAFC) methods, which allowed the additional identification of parasitic females and/or eggs in some of the clinical cases. Interestingly, *S. stercoralis* isolated from all three independent clinical cases exhibited an identical genetic background on the nuclear 18S rDNA (fragment involving hypervariable regions I and IV) and the mitochondrial cytochrome oxidase subunit I (cox1) loci, similar to that of zoonotic isolates from other geographical regions, and not to that of dog-adapted variants.

No products for the treatment of *S. stercoralis* infections in dogs are registered in Switzerland. A combination of fenbendazole and ivermectin (off-label), together with supportive care, lead to clinical improvement and to the cease of larvae shedding. As all treated dogs recovered and no necropsies were performed, a complete absence of adult parasites or migrating larvae after treatment cannot be ensured. A long-term follow-up through faecal control was not possible in all cases.

Although not frequent in Central Europe, *S. stercoralis* infection in dogs may occur and should be considered in the diagnosis of enteritis and respiratory disease. Breeding kennels and animal trade seem to play an important epidemiological role in the dissemination of *S. stercoralis*. Since routine faecal flotation methods have low sensitivity for detection of L1, and shedding of eggs is uncommon, the prevalence, as well as the clinical significance of *S. stercoralis* in dogs might be underestimated. Due to the clinical relevance and zoonotic potential of this parasite, the awareness of both diagnosticians and clinicians is strongly required.

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Literature

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