PREVALENCE OF *TRICHINELLA SP.* IN RED FOXES AND WILD BOARS IN THE WESTERN POMERANIA REGION

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Abstract

Research was carried out on muscle samples from 528 foxes and 101 947 wild boars between 2000 and 2009. The samples were examined using the digestion method. The average prevalence rate of *Trichinella* sp. infection in foxes was 4.5%. *Trichinella* larvae were found in 464 (0.46%) wild boar muscle samples. However, significant differences were observed between the prevalence of *Trichinella* larvae in wild boars in the periods 2000-2002, 2003-2005, and 2006-2009. In 2000–2002, 0.18% of wild boars were infected; in 2003-2005 - 0.49 %, and in 2006-2009 - 0.64%. According to the estimation done by the Polish Hunters' Association, the fox population increased in the Szczecin Region by about 57.6% from years 2003-2004 (7 355 animals) to years 2008-2009 (12 764 animals). At the same time, during these two periods 4 855 and 7 638 foxes, respectively, were shot. The increase in the fox population after an oral vaccination against rabies may be the cause of the increasing prevalence of *Trichinella* infection in wild boars in recent years.

Key words: fox, wild boar, *Trichinella*, trichinellosis, morbidity.

Trichinellosis is a very common zoonosis, existing throughout the world as it is not dependent on climate conditions, due to the lack of a free-living stage. The parasite can appear in all mammals (10). The animal reservoirs for this parasite are mostly carnivores and omnivores. In the course of trichinellosis, two biotopes can be distinguished: sylvatic and domestic. In Europe the most common reservoir animals are wild boar and foxes. The parasite may also occur in dogs, cats, and rodents. In other regions of the world, the most common carriers of *Trichinella* larvae are bears, wolves, and sea-lions. In Europe, besides *T. spiralis*, also a strain: *T. Britovi* can be found in wild boars and especially in foxes; these two strains show no difference in phenotype.

In recent years, the research on the prevalence of trichinellosis in foxes has been conducted in many European countries. *Trichinella* larvae were found in foxes in Estonia (8), Finland (11), Holland (18), Italy (13, 17), Switzerland (7), Denmark (3, 4), and Germany (20, 19, 21). In Poland, investigations on trichinellosis in foxes were conducted in central and eastern Poland by Cabaj et al. (1, 2), and also by Ramisz et al. (15) and Balicka-Ramisz (as a part of the research by Panwitz et al. (12)) primarily in Western Poland. The prevalence of trichinellosis in wild boars has been studied in Estonia (8), Finland (11), Italy (13, 14), Holland (5), Spain (14), Germany (6), and Poland (2, 12, 16).

The objective of this research was to determine the extensiveness of the infection of wild boars and foxes by *Trichinella* larvae in the West Pomerania District.

Material and Methods

The research was conducted between 2000 and 2009 in the West Pomerania District on material taken from 528 foxes and 100 947 wild boars. The examined foxes were shot in the course of hunting. After opening the abdomen, two 5 g muscle samples were taken, one from the diaphragm and one from the forearm. These samples were examined using the digestion method in accordance with Regulation (EC) No. 2075/2005 (22). The wild boar samples were examined in the Sanitary Division of the District Veterinary Inspectorate in Szczecin using the same method.

Results

*Trichinella* larvae were found in 24 (4.5%) samples from foxes (Table 2) and in 464 (0.46%) samples of boar muscles (Table 1).
Significant differences were observed between the prevalence of *Trichinella* larvae in wild boars in the periods 2000-2002, 2003-2005, and 2006-2009. In the first of these periods (2000-2002) *Trichinella* larvae were found in muscle samples from 58 (0.18%) wild boars out of 33 142 animals examined at that time. Between 2003 and 2005, 25 233 wild boars were examined and *Trichinella* larvae were found in 126 (0.49%) cases. In the years 2006-2009, 43 572 muscle samples from boars were examined and in 280 (0.64%) of them *Trichinella* larvae were found. The prevalence of trichinellosis in boars was 4.8 times greater during this period than in 2000-2002.

**Discussion**

Research conducted in a number of countries has shown that the red fox and the wild boar are the main reservoirs for *Trichinella* in the Central Europe. A high rate of infection (up to 50%) was detected in foxes examined in Finland (11). In Estonia, the prevalence of *Trichinella* larvae in foxes was also very high (8), being found in 42.1% of foxes examined. In Holland, Franchimont et al. (5) found *Trichinella* larvae in 4.6% of foxes examined, and van Giessen et al. (18) in 3.9%. In Italy, *Trichinella* larvae were found in 3% up to 35% of foxes examined (13, 14, 17). In Germany, the infection rate in foxes was very low and fluctuated somewhat below 1% (19, 20). In Denmark, *Trichinella* larvae were found in 0.1% of examined foxes (3, 4), and in Switzerland - in 1.7% of foxes (7).

In Poland, the prevalence of trichinellosis in foxes is largely dependent on environmental conditions. In the western part of the country, *Trichinella* larvae were found in muscle samples from 32 foxes (2.29%) out of 1 395 foxes examined (15). These authors, however, noticed a discrepancy between the prevalence of *Trichinella spiralis* in foxes in the North-Western Poland, where *Trichinella* larvae were found in 4.25% of the animals examined, and in the South-Western Poland (Lower Silesia and Opole Districts), where no foxes infected with *Trichinella* sp. were found. Cabaj et al. (2) showed the presence of *Trichinella* sp. larvae infection in 5.4% and 6.3% of foxes in the Central and Eastern Poland, respectively.

In Germany, the prevalence of *Trichinella* in wild boars has fluctuated in recent years between 0.004% and 0.01% (6). In France, *Trichinella* larvae were found in 0.0002%-0.003% of wild boars (6), in Italy - 0.006% (13). In Spain from 0.08 to 0.48% (13, 14), and in Finland up to 1.3% (11). In Holland blood serum samples from boars were examined using the ELISA and in 6.8% of cases positive results were obtained (18).

It is worth noting that a similar situation as in the Western Pomerania (Table 1) was established on the Wolin and Usedom Islands (12). The prevalence of *Trichinella* sp. in wild boars increased from one case in 2004 to 15 cases in 2008 on the Wolin Island and from 0 cases in 2002 to 11 cases in 2008 on the Usedom Island.

According to the data of the Polish Hunters’ Association, the fox population increased by about 7,300 animals in 2003-2004 to 12,760 animals in 2008-2009 in the Szczecin Region. At the same time, during these two periods, 4,855 and 7,638 foxes, respectively, were shot. The increase in the fox population after the administration of an oral vaccination against rabies may be the cause of the increasing prevalence of *Trichinella* infection in wild boars in recent years.

**References**

2. Cabaj W., Moskwa B., Pastusika K., Biern J.: Distribution of *Trichinella* species in Poland. Kosmos 2005, 54,


