TRICHINELLOSIS IN FARMED WILD BOAR: MEAT INSPECTION FINDINGS AND SEROPREVALENCE

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Summary:
A reflection of highly prevalent endemic wildlife trichinellosis is seen in wild boar farming in Finland. During the last five years, 0.7% (15/2265) of wild boars undergoing official meat inspection have been determined to be Trichinella-positive. These findings originate from six different farms. In Finland, T. spiralis and T. pseudospiralis have been discovered in meat inspection of wild boars. ELISA showed 11 out of 99 serum samples (11%) as having specific antibodies for T. spiralis crude antigen. Positive samples were from three out of the thirteen farms from which the sera were available. Most of the positive serum samples (8/11) originated from a farm where trichinellosis was also revealed in meat inspection, the other two seropositive farms were without previous Trichinella records. Over the last few decades, no reports have been made of human trichinellosis acquired in Finland. This indicates both efficient meat inspection as well as public awareness of high-risk foodstuff.

KEY WORDS: ELISA, epidemiology, serology, T. spiralis, T. pseudospiralis, wild boar.

Material and Methods
Meat inspection of wild boar generally takes place in a local low-capacity slaughterhouse with traditional trichinoscopy. Alternatively, some animals are inspected in large-scale slaughterhouses that use the digestion method. All positive findings are confirmed in EELA (National Veterinary and Food Research Institute) by the digestion method. Meat-inspection statistics from EELA were used in this paper.

For molecular typing, we obtained Trichinella samples from epidemics on two farms. Both RAPD (Bandi et al., 1993) and specific primer pairs SB4-2, SB4-4 and SB5 (Wu et al., 1997) were used in PCR-assays.

Wild boar farmers in Finland have recently set up a voluntary monitoring programme for contagious swine diseases. Representative number of serum samples from slaughtered animals are sent to EELA for serological assay. Apart from the programme we analysed 99 serum samples originating from 13 different farms for Trichinella antibodies. Crude antigen of T. spiralis larval lysate was used to coat the ELISA plates. The cut-off value was set with a weakly positive serum collected during an earlier investigation from a mildly infected boar with 0.1 larvae per gram of meat (lpg).

Results
During the last five years, Trichinella-positive wild boars have been found on six farms. Out of all inspected animals, 0.7% (15/2265) have been condemned due to trichinellosis. The intensity of detected infections varied from 0.07 to 680 lpg (median 5.2 lpg).

On two of the positive farms, the infecting species have been identified as T. spiralis and T. pseudospiralis (Fig. 1). The first case was an outbreak where nine out of 25 slaughtered animals were positive; T. spiralis was the sole species involved (Oivanen et al., 2000). On the other farms, only sporadic cases occurred. In PCR, specific primer sets SB4-2 and SB4-4 (designed for

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DISCUSSION

In Finland, trichinellosis has been detected almost annually over the last twenty years in domestic pig, but the prevalence has been low, being only 0.004% (Oivanen et al., 2000). Wild boar farming, with a corresponding prevalence of 0.7% bears a much higher risk. An obvious explanation lies in the production factors which have a closer contact to wildlife. Both *T. spiralis* and *T. pseudospiralis* have previously been reported also in feral wild boars elsewhere (Perez-Martin et al., 2000, Ranque et al., 2000).

Serum samples for our survey have been obtained at slaughter in accordance with official regulations. Although we do not know exactly which serum belongs to which animal, there is good reason to believe that all serologically positive animals have passed meat inspection, with no *Trichinella* larvae having been found. Earlier reports have also shown circulating *Trichinella* antibodies with digestion-negative results. Interestingly, a common sylvatic species in Finland, *T. nativa*, has not been found in farmed wild boars so far. A report of experimental infection with *T. nativa* in pigs failed to show muscle larvae, but did reveal high antibody response (Kapel et al., 1998). Similar results have been seen in reindeer (Oksanen et al., 2000). These and other similar reports indicate host species-specific resistance to certain *Trichinella* species. In Finland, two associations of wild boar farmers exist, but only the smaller one with 25 farms certifies that animals have never been cross-bred. Thus, many so-called farmed wild boars are actually cross-bred with domestic swine. Therefore, some of the seropositive results without any meat inspection findings could indicate exposure to *T. nativa* with a natural resistance of wild boar or cross-breds to the particular species. However, reports of *T. nativa*-infected sylvatic wild boar (Pozio & Kapel, 1999) and domestic pigs (Gasser et al., 1998) do exist.

The clustering of positive serum samples to the farm with trichinellosis is intriguing. This either shows a broader exposure to *Trichinella* than discovered in meat inspection or indicate some factors on that farm inducing cross-reactions to yield false-positive results. Additionally, higher sensitivity of ELISA than detection of muscle larvae must be taken into consideration.

Today practically all farmed wild boars are born in captivity, yet farms are not consistently *Trichinella*-negative. Thus, some vectors or infection routes remain to be discovered.

REFERENCES


Oivanen L., Mikkonen T. & Sukura A. An outbreak of trichinellosis in farmed wild boar in Finland. APMIS. In press.


