TRICHINOSIS IN LUBLIN PROVINCE IN 2003-2010 ON A BACKGROUND OF WILD BOAR’S POPULATION DYNAMICS

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Abstract

The research aimed at evaluating the epizootic and epidemiological situation of trichinosis during the last 8 years in Lublin province on a background of progressing increase in wild boar population within the region and in the whole country. Data for the study were taken from the report on the results of the official examination of slaughter animals and meat, poultry, game, lagomorphs and aquaculture animals and six reports on the number of trichinosis cases found at wild boars and domestic swine. In order to evaluate the trichinosis epidemiological situation within the region, reports of the National Institute of Public Health–National Institute of Hygiene on the number of identified trichinosis cases in people, as well as the number of hospitalised patients were presented. In addition, information on the population and hunting achievement of wild boars in hunting circuits of Lublin province during the last 8 years was enclosed. The number of identified trichinosis cases in meat of wild boars from Lublin region increased 9 times, while the percentage of trichinosis occurrence in reference to the number of examined carcasses almost 3-fold. At the same period, the number of porcine carcasses, in which trichinosis was found, decreased by over 4 times. Over double increase in wild boar population on the studied area was observed during the evaluation. Dynamic increase in the population size – in an aspect of the species population interaction with the living habitat, and in the form of the increase in the number of damages of crops and cultivation fields – contributed to intensified hunting pressure towards the species expressed as almost 3-fold increase of wild boar hunting. Analysis of epizootic and epidemiological situation of Poland indicates that wild boar meat was the principal source of trichinosis during the studied period. Considering Lublin province, the number of identified trichinosis cases is still high as compared to eastern and central provinces. Meanwhile, when compared to western and northern Poland, the level of trichinosis invasion can be considered as low. Furthermore, the trichinosis morbidity among people, that does not exceed 0.18/100 thousand inhabitants, can be regarded as low. Nevertheless, the fact of underestimating the necessity of both wild boar’s and swine’s meat examination seems to be alarming.

Key words: wild boar, pig, trichinosis, epidemiology, Poland.

Trichinosis, as a typical example of parasitic zoonosis with complex epizootiologic process, is an epidemiological problem in Poland and many other European countries, as well as worldwide. This results from the fact that no barriers, neither administrative nor geographical, can stop the parasite. Trichinosis is brought about by polyxenic outer parasites from nematodes group belonging to Trichinella family. However, the epizootic and epidemiological picture of this disease has been significantly altered for the last several years. New Trichinella species pathogenic for humans has been identified. At present, eight species of these parasites and their four genotypes are classified (1). In addition, the range of the parasite has widened and general sources of their infection have been modified. Due to the possibility of trichinosis occurrence both in forests and synanthropic habitats, both domestic and wild animals can be the source of Trichinella, thus its living environments are unlimited. Despite of quite common opinion that wild and domestic carnivorous and omnivorous mammals are the reservoir of trichinosis, the disease has been recently identified also in wild and domestic herbivorous mammals, as well as in sea mammals and birds. About 250 animal species are the reservoir of the disease. At such wide spectrum of the occurrence of the disease, it makes up quite serious epidemiological problem, yet Trichinella spiralis is the most significant in our country (1, 9, 10, 16).

The presence of trichinosis in the nature is one of the general factors determining the occurrence of the disease in domestic animals, namely swine, and in people. Wild boars and predators, mainly fox, are the principle source of Trichinella in natural environment of our country (1, 3, 5, 7, 8, 13-15). Due to dynamically developing populations of these wild animals, and possibility of their migration, as well as the fact of increasingly wider universality of wild boar meat consumption, the trichinosis problem becomes more significant (1, 7, 12, 15).
The research aimed at evaluating the epizootic and epidemiological situation of trichinosis during the last 8 years in Lublin province on the background of progressing increase in wild boar population within the region and in the whole country.

Material and Methods

Data for the study were taken from the report of the General Veterinary Inspectorate on the results of the official examination of slaughter animals and meat, poultry, game, lagomorphs and aquaculture animals and six reports on the number of trichinosis cases found at wild boars and domestic swine. Statistics referring to 2003-2007 include exclusively domestic animals examined in processing factories. Meanwhile, reports from the last three years took into account both data related to the official examinations in processing works and individual samples supplied. In order to evaluate the trichinosis epidemiological situation within the region, reports of the National Institute of Public Health–National Institute of Hygiene on the number of identified trichinosis cases in people, as well as the number of hospitalised patients were presented. In addition, information on the population and hunting achievement of wild boars in hunting circuits of Lublin province during the last 8 years were enclosed. Achieved results were listed in the form of tables and graphs.

Results

Epizootic situation of trichinosis in Poland in 2010. The occurrence of trichinosis in our country during the last several years was characterised by quite great variability in both spatial and quantitative grasps. The largest number of trichinosis cases in 2010 in wild boars and domestic swine was found in Western Poland, similarly as one year before. This, however, does not mean that the central and eastern provinces were free from trichinosis (5, 8). According to the data of National Institute of Hygiene (17), Trichinella was found in 558 wild boars and 12 pigs in 2010 (Fig. 1). The percentage of trichinosis in this period in relation to the number of examined carcasses of wild boars was determined at the level of 0.64%, while in swine the indicator amounted to only 0.00006%. The largest number of trichinosis cases in wild boars was identified in the northern part of Poland, where over half of trichinosis cases were diagnosed in three provinces (Kuyavian-Pomeranian, Pomeranian, and West-Pomeranian). Considering the number of trichinosis cases in swine, Mazovian and Lublin provinces dominated, where almost 60% of all cases were diagnosed.

Fig. 1. Number of trichinosis cases at swine and wild boars in particular provinces in 2010. Trichinosis cases in swine (numerator) and wild boars (denominator) in the province

Epizootic and epidemiological situation of trichinosis in Lublin province. During the last 8 years of study, trichinosis was diagnosed in wild boars each year and only for 4 years in swine in Lublin region (Table 1). The number of detected cases of trichinosis in wild boar’s meat increased 9-fold within the studied period. In 2003-2005, the percentage of diagnosed trichinosis cases did not exceed 0.2%; in 2006 it amounted to 0.35%, while the highest level of the infection was recorded in 2009, when Trichinella was found in every 200 wild boar’s carcasses. In the last year, the level of Trichinella infection decreased to 0.31%.

Table 1

Occurrence of trichinosis in swine and wild boars in Lublin province in 2003-2010*

<table>
<thead>
<tr>
<th></th>
<th>Wild boar</th>
<th>Pigs</th>
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</thead>
<tbody>
<tr>
<td>Number of</td>
<td>Number of</td>
<td>Percentage of</td>
</tr>
<tr>
<td>examined</td>
<td>infected</td>
<td>infected animals</td>
</tr>
<tr>
<td>animals</td>
<td>animals</td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td>1,849</td>
<td>2</td>
</tr>
<tr>
<td>2004</td>
<td>2,536</td>
<td>3</td>
</tr>
<tr>
<td>2005</td>
<td>1,670</td>
<td>3</td>
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<tr>
<td>2006</td>
<td>1,987</td>
<td>7</td>
</tr>
<tr>
<td>2007</td>
<td>3,567</td>
<td>5</td>
</tr>
<tr>
<td>2008</td>
<td>5,253</td>
<td>10</td>
</tr>
<tr>
<td>2009</td>
<td>3,242</td>
<td>18</td>
</tr>
<tr>
<td>2010</td>
<td>5,848</td>
<td>18</td>
</tr>
</tbody>
</table>

* - data from the General Veterinary Inspectorate.
Fig. 2. Population and hunting achievement of wild boars during the last 7 hunting seasons in Lublin province.*

The highest percentage of trichinosis diagnosed in swine’s meat was observed in 2003, when the share of infected animals was 0.0016% of all examined samples. Trichinosis was not found for the subsequent three years (2004-2006). In 2007, nine cases were diagnosed (0.00092%); in 2008, pork was free from *Trichinella*. In the two last years (2009 and 2010), trichinosis was recorded in one (0.00012%) and four (0.00044%) cases, respectively.

Six cases of trichinosis in people were recorded at the same period in Lublin region. In 2005, – two cases including one hospitalised; in 2007 – four cases, although hospitalisation was not necessary. These data, in combination with the number of infected cases in particular provinces, indicate that the trichinosis morbidity remaining at the level lower than 0.18 when recalculated onto 100 thousand inhabitants, can be considered as insignificant.

The highest morbidity in humans was recorded in western and northern provinces, which can be directly associated with the wild supply of wild animal’s meat in these regions, namely wild boar’s carcasses, which results from considerable populations of the species and locally high density indicators (2, 6, 7).

Dynamics of wild boar population in Lublin province. A substantial increase in wild boar population occurred in the studied period in Lublin region, which was directly reflected in the population density indicator for the species (Fig. 2). Data from hunting reports for spring 2003 indicated that slightly more than 6 thousand wild boars were catalogued in Lublin province. In the subsequent 3 years, the number of wild boars remained at similar levels. Starting from 2007, when the wild boar population was estimated for almost 7.5 thousand, more and more animals were catalogued from year to year: in spring 2009, the number was estimated for over 12.5 thousand, while in 2011, the population of the species in Lublin region reached 15.7 thousand animals. The hunting achievement of wild boars due to shooting remained at similar levels of about 3.7 thousand animals for the first 4 years of the studied period. The hunting exploitation of the population during particular hunting seasons ranged within 53%-64% of its spring level. Starting from 2007, the number of wild boars increased, reaching over 5 thousand animals. The level of the hunting exploitation of the population amounted to 70% of its spring value that period. During the hunting season 2008/09, the size of the hunting achievement within Lublin province exceeded 9.5 thousand animals, while the indicator of hunting exploitation of the population for the first time exceeded 100% of its spring level. In 2010, the hunting achievement of wild boars was close to 12 thousand animals per a hunting season, whereas the indicator of hunting exploitation of the population reached 90% of the estimated spring population.

Discussion

The highest morbidity in humans was recorded in western and northern provinces, which can be directly associated with the wild supply of wild animal’s meat in these regions, namely wild boar’s carcasses, which results from considerable populations of the species and locally high density indicators (2, 6). The situation is somehow directly associated with the interactions between animals and their environment for living. Availability of high-energy feed within wide structures of agrocenoses has a stimulating influence on wild boar’s reproduction processes, which manifests as heavier body weight, earlier sexual maturity, readiness of younger females for reproduction, and larger litters in the case of older females. At the same time, a dynamic increase in the
population has considerable effects on the level of damages made by the species within crops (4, 6, 11).

In a view of presented information, it can be noted that trichinosis is present in both natural and synanthropic environments. Analysis of epizootic situation in Poland indicates that northern and western provinces of the country are regions with the highest intensity of the invasion. Such situation should be associated with high wild boar’s population density in these regions, where infections are diagnosed from several hundred, even to several thousand times more frequently than in swine (2, 5, 6, 15). Considering Lublin region, the level of trichinosis in wild boar’s and porcine meat last year should be assumed as high, while morbidity level as low, as compared to other provinces of this part of Poland (2, 6). Among animals whose meat is introduced onto the market, meat from wild boars, the population of which has recently suddenly increased in the Lublin region as well as other provinces, remains still the principal trichinosis reservoir. An increase in wild boar population and in consequence the higher level of the species culls results in higher supply of wild boar’s meat on market. These elements, in combination with opportunity to direct trade of wild boar’s products, contribute to the common availability of the meat as a high-quality and dietetic product. The lack of examination for trichinosis may result in an increased morbidity in people, which up-to-date is observed on a low level. Therefore, activities causing higher social wisdom on the threats caused by trichinosis, along with the necessity of the post-slaughter examination of meat of domestic animals, namely wild boar’s meat for culinary purposes, are extremely important issues of trichinosis prophylaxis (1).

References

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