SCREENING OF TRICHINOSIS IN WILD BOAR IN IASI COUNTY, N-E AREA OF ROMANIA IN 2014-2018

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Abstract

Unrealizing the control of wild boar, in the case of shotguns, may be the cause of the occurrence of positive cases of Trichinella in the county of Iasi. The completion of the epidemiological studies of the hunting funds in Iasi County contribute to the identification and confirmation of the presence of trichinella outbreaks. EFSA adopted on 3 October 2011 a scientific opinion on the public health risks to be taken into account when carrying out meat inspections. In this opinion EFSA notes that Trichinella represents a medium risk to public health related to meat consumption. EFSA identifies the sporadic presence of Trichinella in the United States mainly for swine fever or for those born in freedom. Annual surveillance of the same hunting funds for wild boar is an important tool for assessing the evolution of prevalence. Regulation (EC) No 853/2004 does not apply to wild boar which is supplied directly to the final consumer, so it is up to the Member States to adopt national measures to limit the risk of man being infected with Trichinella following wild boar consumption. The hunting funds from which the samples were collected are in Iasi County and represent the Turia Perieni area, Bahlui area and Mădârjac area. The samples were collected from the elected places. Between 2014 and 2018, we processed 200 samples, and the method used to detect the parasite was the compression method. Even if the results were negative, the study has brought new data on disease dynamics among wild boar population from Iasi county hunting grounds.

Keywords: *Trichinella, wild boar, prevalence, compression method*

Introduction

Trichinelosis is a parasitic zoonosis with a particularly large geographical distribution, commonly found in many domestic and wild animal species, but also in humans. The disease has a pronounced focal character, the highest incidence is observed in pigs, boars and humans, being attributed to the high number of sources of infestation in urban and rural areas (1,3).

The source of infestation for wild boar is represented by infested rats, infested foxes, and for man the source is made of pork and wild boar. The resistance of trichinel cyst in the external environment is dependent on the environment in which the infected meat is found.

Trichinella nematodes have the autoheteroxen biological cycle, which means that both larval stage and adult stage (1,5) can develop in a single host.

Trichinelosis evolves in pigs in two phases: the intestinal phase determined by adult nematodes and the muscular phase produced by larval stages. The disease develops asymmetrically in adult animals. Within the *Trichinella spiralis* species, 7 subspecies were identified: *Trichinella spiralis spiralis, Trichinella spiralis nativa* (wild boar and bear, rats, mice), *Trichinella spiralis nelsoni* (wild boar) and *Trichinella spiralis britovi* (foxes, wolves, bears) (2,6).

Infestation of host animals is done by eating meat containing trichinella ticks or sexually differentiated larvae. By digestion of trichinelic cysts in the stomach, the larvae are released and passed into the duodenum, in jejunum the larvae sink into the intestinal epithelium and develop intracellularly during the four smears after which they become adults within 26 hours of infestation.

Adult copulation takes place in the intestinal epithelium at 30-35 hours after infestation. After fertilization the females penetrate to the submucosa, sometimes in the lymphatic vessels, from where they are transported into mesenteric lymph nodes. After 4-6 days of infestation, the larvae are deposited and newly deposited larvae are stage I larvae entering the lamina of their own, in the lymphatic capillaries or blood vessels, from where they are disseminated in the striated muscles (diaphragmatic pans, diaphragm, muscles masseters, tongue, intercostal muscles). After spiral, the larvae become infested for other hosts, and 21 days after infestation, a membrane forms

around the spiral larvae so that the *Trichinella* cyst appears, thus becoming resistant to digestion. In the mood, the most parasitic muscles are well-irrigated, located in the vicinity of tendinous tissues.

Material and method

Boar is considered an invasive species, which has a great power of adaptation, including in less favorable conditions. The legal hunting season is 6 months for females and piglets (1 June - 31 January) and for males 12 months (January 1 - December 31). Harvesting is done by shooting, for trophies, for selection or for meat.

In the epidemiological conditions of our country and of Europe, boar presents a particular interest for some health problems (1, 3).

The hunting funds from which the samples were collected are in Iasi County and represent the Turia Perieni area, the Bahlui area and the Mădârjac area. Samples were collected from the elective sites, namely diffraction pillars, intercostal muscles, tongue, diaphragm, masseter muscles. Between 2014 and 2018, we processed 200 samples, and the method used to detect the parasite was the compression method (Figures 1 and 2).

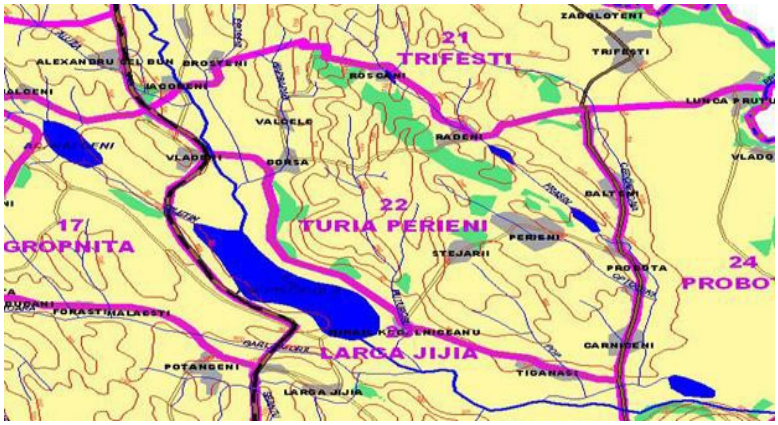

Fig. 1 The geographical distribution of the Turia Perieni hunting fund, from which the animals analyzed

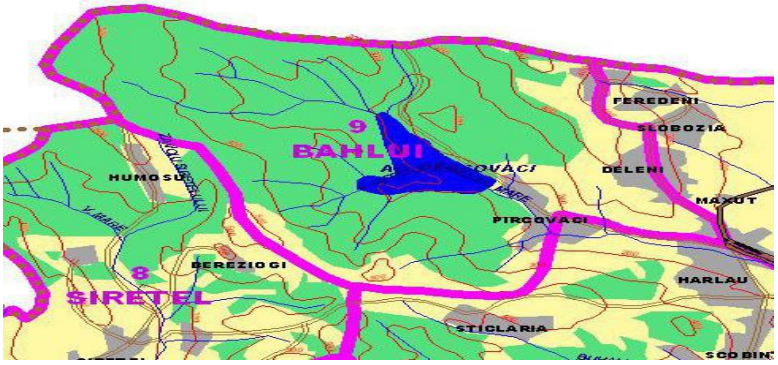

Fig. 2 The geographic distribution of the Bahlui hunting fund, from which the animals under analysis were derived

The compression method is considered to be the classic method in use since the beginning of the official diagnosis in our country (4, 5).

The trichinoscopic examination comprises the following steps:

1. Identification of the meat for trichin detection and sampling. To perform the trichineloscopic examination of wild boar after identifying the carcase number, samples from each diaphragm pillar (from the passage between the muscular part and the tendonous part), the external masseters, the muscles of the anterior limb, the intercostal muscles and the muscles of the tongue that for each animal there were 6 samples.

2. Preparing and displaying sections on the compressor

The boar of each sample was prepared 14 sections, in total for each boar prepared 84 sections, respectively 3 compressors for each carcass.

3. Clarification of the sections is done to create the contrast needed to detect the parasite. Wild boar was examined only after clarification and the clarifying solution used was 3% potassium hydroxide, the solution was placed in a watch bottle and the sections were maintained for up to 15 minutes.

After showing the sections on the bottom blade of the compressor, they were covered with the upper blade, the compressor bolts were tightened and examined.

4. Examination of the sections and diagnosis

Examination was done with trichinoscope with screen, in zigzag, from left to right, including the area around the section.

The negative result did not reveal the presence of any trichinel cyst and no larva was found in the sections.

Results and discussions

Commission Regulation (EC) No.2075 / 2005 of 5 December 2005 laying down specific rules for official controls on the presence of Trichinella in meat provides for the sampling of carcases of species susceptible to Trichinella infestation in order to establish the status of holdings and regions, as well as the conditions for the import of meat. The Regulation provides reference methods and equivalent methods for detecting the presence of Trichinella in carcass samples (1,3).

The European Food Safety Authority (EFSA) adopted on 3 October 2011 a scientific opinion on the public health risks to be taken into account when carrying out meat inspections. EFSA notes that Trichinella represents a medium risk to public health related to meat consumption and concludes that the only way is to carry out controls on the carcass (1,4).

The harvests were made by shooting at hunting parties organized predominantly during the cold season. The age and gender categories on all hunting grounds from which the samples were examined were: 7 females between 1-2 years old, 68 males between 1-2 years old, 3 females older 2-year-old and the most representative batch was 121 mask older than 2 years (Table 1).

Table 1.

Age categories and sex harvested on hunting grounds

Nr. crt.	Hunting fund	Tissue weighed	Age and gender category			
			F 1 – 2 ani	M 1 – 2 ani	F > 2 ani	M > 2 ani
1.	Turia Perieni	Diaphragmatic pillars aperture M.intercostali M.maseteri	5	35	2	88

2.	Bahlui	Diaphragmatic pillars aperture M.intercostali M.maseteri	2	22	1	25
3.	Mădârjac	Diaphragmatic pillars aperture M.intercostali M.maseteri	1	11	0	8

The public health attestation for the *Trichinella* examination should be included in the veterinary certificates accompanying wild boar in accordance with Reg. (EU) No. 206/2010.

Periodic surveillance of wild boar or other indicator animals is an important tool for assessing the prevalence of the disease and it is necessary that the results of that surveillance be included in an annual report established in accordance with Directive 2003/99 / EC of the European Parliament and of the Council.

The epidemiological indicators for *Trichinella* are the epidemiological situation in the country, the sporadic presence of wild boar disease.

After the examination of the samples the results were negative, this study brought new data on the disease dynamics among the wild boar population from the Iasi county hunting funds (Table 2).

Table 2

The prevalence of *Trichinella spiralis* nematode in boars examined between 2014 and 2018

Nr.crt.	Hunting fund	Number of tested samples	Number of positive samples
1.	Turia Perieni	130	0
2.	Bahlui	50	0
3.	Mădârjac	20	0

Council Regulation (EC) No 853/2004 does not apply to wild game or wild game meat which is directly supplied to the final consumer, so it is for the Member States to take national measures to limit the risk of man being contaminated with *Trichinella* from infected pork.

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Conclusions

1. In recent years, studies conducted at national level have shown that wildlife plays an important role in Trichinella spiralis infestation. The results of this study brought new data on the infestation dynamics among the wild boar population from some hunting funds in Iasi county.

2. Measures are required to raise awareness of the risk of man infesting meat or meat products from wild boar from animals that may be infected without being subjected to veterinary control.
3. The result of the tests tested by the compression technique was consistent with all the years studied and all the hunting analyzes analyzed, with no positive results recorded.
4. EFSA has adopted scientific opinions on the public health risks to be taken into account when carrying out the examination of wild boar.

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