

MORPHOLOGICAL PARTICULARITIES FOUND IN THE ANALYZED TRICHINOSIS CASES

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Abstract

The present paper intends to reveal the main methods for diagnosing trichinosis in an approved county laboratory and the analysis of samples from domestic and wild pigs. Furthermore, we will try to argue the need for implementing the method of detecting Trichinella larvae by artificial digestion, given that it is the only detection method used within the European Union.

Key words: meat samples, trichinosis, farms, venison, homesteads, positive cases.

INTRODUCTION

The study was performed on samples sent for analysis to the laboratory and to all the divisions covered by the authority of the Sanitary-Veterinary and Food Safety Department. Our research is aimed at evaluating the morphological aspects of the examined formations (cysts) and their potential for trichinosis.

MATERIAL AND METHODS

In order to perform the morphological analysis of the meat samples collected from slaughterhouses, sylvan sources and people's homesteads, the method of digestion of combined samples was employed, using a magnetic stirrer (artificial digestion).

RESULTS AND DISCUSSION

Out of the total of 76 samples diagnosed positive following analysis and concerning all categories of meat, the specific morphological aspects were as follows:

The formation in fig. 1 has all the attributes of a fertile cyst (classical encapsulated larva form embedded along the fibers of the striated muscle tissue found in a meat sample from a homestead. It is worth pointing out the oval, lemon-like shape of the cyst, with corks at both ends, which are actually made up of fat cells) and therefore a high potential for trichinosis.



Fig.1 Fertile *Trichinella* spp. cyst

In order to visualize the diagnosed formations, we went on to methods of vital staining meant to point out pathogenic features, as we can see in the cysts in Fig. 2.



Fig.2. Fertile cysts from a meat sample obtained through traditional slaughter.
Contrast staining performed with toluidine blue.
Trichinoscopic test enhancement X 100.

As for venison, wild boars and bears, we came across fertile cysts in which a fibrous reactive process had taken place, with a tendency to form a granuloma.

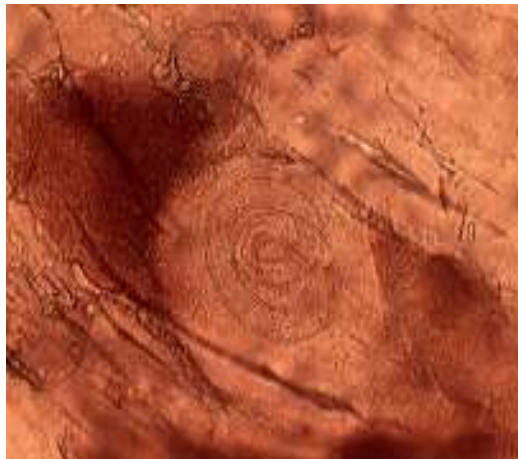


Fig. 3 Parasitic granuloma developed around a fertile cyst in a venison sample.
Pericystic fibrous reaction

The cases we have encountered more frequently in venison have revealed calcified cysts, whose characteristic shape made them conspicuous, but in the below image we can notice in the same area a fertile cyst, too; this situation justifies the belief that in the same animal and even in the same muscle tissue there can be both fertile and old (calcified) cysts.

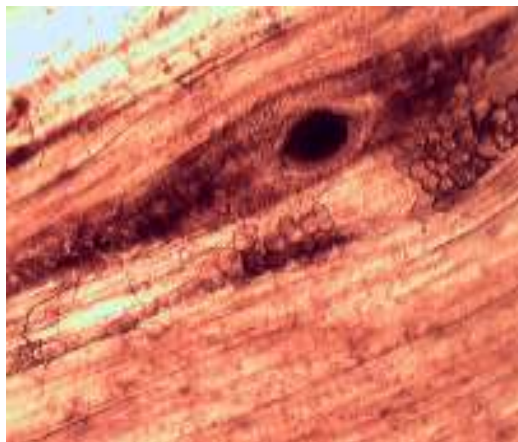


Fig. 4 Presence in the same muscle tissue of 2 cysts with different potential for trichinosis

The calcified forms also revealed processes of chronic fibrous myositis, with sclerosis, which was easily marked by using a clearing solution with a higher concentration than solutions usually employed in

traditional techniques (5-7%). Calcification, conjunctive reaction and fibrosis process

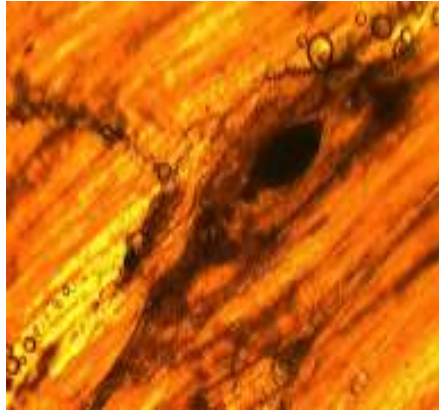


Fig. 5. Calcified cyst and fibrous granulomatous myositis (100X)

Beside the specific morphological aspects, considered typical to the *Trichinella spp.* cyst, the studied cases also revealed formations in whose structures the necrosis and calcification processes were slightly noticeable, and the fibrous reaction developed along the cyst, thus preserving the characteristic oval-elongated shape of fertile cysts. Such an image was seen in a positive sample from a traditional slaughter, and the epidemiological investigation and anamnesis determined that the animal had been treated for digestive helminthes about 2-3 month prior to its killing.

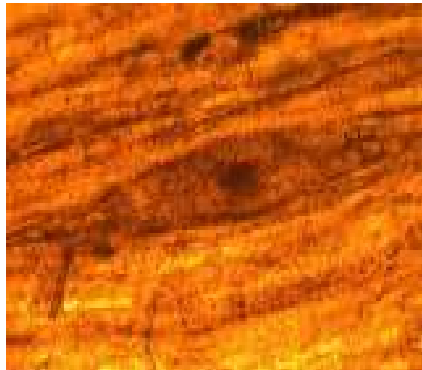


Fig. 6. Parasitic granuloma developed around a cyst in an animal treated with Albendazol

As to the trichinoscopic test performed in the laboratory, which was based on artificial digestion, positive cases revealed morphological aspects materialized through the presence of live larvae with high potential for trichinosis.



Fig. 7. *Trichinella spp.* larvae with high potential for trichinosis

Based on the analysis of the risk for trichinosis, we can conclude that in the area covered by the authority of the sanitary-veterinary laboratory, a number of 76 positive samples was recorded, thus the necessity and importance of a trichinoscopic test are obvious. Both domestic swine meat and venison (wild boars and bears) remain types of meat with high potential for spreading trichinosis. The risk of it reaching human beings is high due to the consumption of untested or insufficiently cooked meat, etc.

The trichinoscopic test is a particularly important medical action, as we pointed out in this paper; the test must be performed by a vet and must remain along with other medical actions under the jurisdiction of the Sanitary-Veterinary Department.

Particular attention must also be paid to the type of muscle tissue used in the trichinoscopic test. Regarding samples that come from people's homesteads, it is important that the areas sent to trichinoscopic testing are not limited to the diaphragm pillars. The muscular part of the diaphragm, intercostals muscles, tongue muscles, masseter muscles etc. represent important muscular zones in diagnosing trichinosis. The greater the number of muscle tissue presented for analysis, the more precise and definite the result.

Another important aspect is the necessity to move from the direct trichinoscopic test (by compression) to diagnosing trichinosis by artificial digestion. The latter method allows for the quick testing, analysis and diagnosis of several samples simultaneously, that is up to 100 meat samples. It is an easy method of drawing out *Trichinella spp.* larvae and of isolating these larvae in order to identify the most frequent species in a specific geographical region.

We came across both fertile forms with high potential for trichinosis as well as calcified forms.

CONCLUSIONS

From the point of view of the morphological characteristics of the cysts found in positive samples, the following can be concluded:

- a) Both in venison and in meat from traditional slaughters, we found fertile cysts with high potential for trichinosis as well as calcified infertile ones;
- b) Fertile cysts were more frequent in venison, but along with inflammatory processes as fibrous granulomatous myositis;
- c) In a positive sample we found calcified and fertile cysts on the same muscle tissue;
- d) A positive sample from traditional slaughter revealed infertile cysts in which the process of calcification and the fibro-conjunctive reaction around it showed all the characteristics of parasitic granuloma.

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