

# Epizootology of Sheep Tizaniesiosis, Some Diagnostic Signs of the Causative Agent

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**Summary.** The article provides literature data on sheep thizaniezsiosis and its current epizootological state, according to individual studies, on sheep lesions with thizaniesiosis, anatomical and morphological symptoms of its pathogen, and differences from other intestinal cestodes.

**Key words:** cestodes, thizaniesia, scolex, strobila, joint, capsule, eggs.

## Introduction

In Uzbekistan, the causative agent of sheep tizaniesiosis was first found in November-December 1930 at the Kasan karakul farm in Kashkadarya region. Later, in 1946-1948, he discovered that this cestode was parasitic on Karakol sheep of Samarkand region and named it *Thysaniezia ovilla* (Rivolta, 1878). Then, in 1951-1953, in a study of the epizootiology of sheep anoplocephalyatosis in Samarkand region, among the cestodes found in the small intestine of sheep (*Moniezia expansa*, *M.benedeni*, *Avitellina centripunstata*), *Thysaniezia ovilla* was considered the most common cestode of 53.0% of all intestinal cestodes: in terms of the extent of the invasion, this parasite is also the leading cause of tizanieziosis, which infects lambs from 5 months of age with *Th.ovilla*, and adult tizaniesias occur in spring and winter among sheep [12].

Tizanieziosis is a helminthic disease caused by a tapeworm-shaped cestode that parasitizes the small intestine of sheep, goats, and cattle. This cestodosis occurs in all MHD and most foreign countries. It causes great economic damage, especially to young animals with small horns, with higher mortality rates among parasites when the invasive intensity is high. Sheep tizanieziosis in Uzbekistan was studied by most researchers from 1946 to 2005. However, the data obtained on the prevalence of the pathogen, the age of the sheep, the seasons of the year, the indicators of contamination with it according to the climatic geographical zones were analyzed differently. Therefore, it is important to conduct research aimed at improving the current epizootiological situation of sheep tizaniesiosis, its prevention and control measures.

## The purpose of the study

In our study, we analyzed the literature data on the study of sheep tizaniesiosis, comparing them with individual studies, as well as studying the anatomo-morphology of the causative agent of tizanieziosis, its difference from other intestinal cestodes and the current epizootiological status.

## Research materials and methods

The sources of scientific literature on the anatomo-morphology, biology, epizootology and prevention of the pathogen of sheep tizaniesiosis in Uzbekistan were analyzed and compared with the results of our personal research.

In our study, helminthological dissection of the small intestine of sheep that died of various diseases and forced slaughter in the laboratory and examination of feces samples of sheep of different ages using helminthoscopy and helminoovoscopy methods were performed.

## Research results and their analysis

Tizanieziosis is a ruminant bipolar mammalian cestodosis disease, the only causative agent of which, as shown above, belongs to the family Cyclophyllidea of the Cestoda class, the family Avitellinidae, *Thysaniezia giardi* (Moniez, 1879). Acute or chronic course of the disease depends on the intensity of the invasion of the parasite, the age of the animal, feeding conditions, general condition. Infection with *T. giardi*, according to our observations, rarely occurs in the pure state, and in the migratory state in

combination with other intestinal cestodes. Accordingly, it should be differentiated from pathogens monieziosis, avitellinosis, stileziosis.

According to the literature, in the Samarkand region, the cocoons and eggs of *Tizaniezia* appear in the feces of lambs from August. In October, damage to it rises sharply (40%) and in November it rises to 44.4%. A special study of sheep tizanieziosis in the desert-pasture zone of Samarkand region (Nurabad district) found that lambs are more susceptible to this disease and their invasiveness increases to 60.0-70.0%, and in older sheep these indicators do not exceed 30.0%. In lambs, the disease in the semi-desert zone peaks in autumn, and in older sheep in spring and autumn. Accordingly, lambs are invaded in the fall at 5-6 months of age, and adult sheep in March and August. According to him, in the irrigated and foothill areas, sheep are also infected with tizaniesia and moniesia in the summer [7, 12].

In the semi-desert zone of the southern region of Uzbekistan, sheep were found to be infected with 7.1% of tyzanniesias [1]. In the study of the epizootiology of sheep typhoid in Kashkadarya and Surkhandarya regions in 1964-1967, it was found that the causative agent of this disease is the majority of all intestinal cestodes (54.6%) [8]. The author writes that the new name - *Thysaniezia giardi* (Moniez, 1879) occurs among sheep in all seasons of the year, its average invasive intensity is 3.5 copies of the parasite, with tyzanniesia they are maximized in autumn (40.6%) and minimally in summer. (3.0 percent) and winter (4.7 percent) damage was reported. Tizanis were found in lambs from 4 months of age, with a greater incidence in sheep aged 7 months to 2 years. Changes in the incidence of typhoid fever by zones and age of sheep According to the author, sheep in the foothills are twice as likely to be affected by typhoid fever as in the desert-pasture zone; 3-18.6 percent), while in the elderly this figure is the highest (41.6 percent). In the foothills, the incidence of tizaniesiosis is highest in lambs under one year of age (22.2 percent), followed by a decrease in the incidence of tizanniesia in sheep age, and in older sheep it is only 0.9 percent. Thus, according to the author, the variability of tizanieziosis in both zones varies according to the age of the sheep [8].

In the desert-pasture zone of Kashkadarya region, 17.4% of lambs under one year of age were infected with tyzanniesiosis in the spring, the lowest level in the fall, and the incidence of tizanniesiosis in the summer. Tizanniesiosis was also reported to be high in spring (73.8%) in older sheep [6].

Another study reported tizanieziosis, which mainly affects older sheep, but is less common in young sheep. However, the author noted that the disease is more common in the foothills than in the irrigated and desert-pasture zones. In this zone, 16.0% of sheep were infected in the spring, 0.8% in the summer, 20.0% in the autumn and winter, and in the irrigated zone in the spring, autumn and winter, 7.0-8.0%, and 4.0% in the summer [7].

Long-term studies in 10 regions of Uzbekistan and Karakalpakstan have shown that *T. giardi* is widespread among other intestinal cestodes of sheep and is the first in terms of damage and is found in all regions where it is examined. According to the author, the average incidence of tizanieziosis in sheep of all ages was 10.6%, with the incidence of *T. giardi* from 1 to 31 copies, lambs under one year of age - 1.0-26.2%, sheep under two years of age - 5.0-23.0%. observed to be affected by tyzanniesia. In the foothills and desert-pasture zones, sheep are most affected by tyzanniesia in summer and autumn, and in lambs from late May to June, the parasite's isolated joints are isolated [3].

According to the literature, 20.8% of sheep in southern Uzbekistan are infected with tyzania, and in the desert biocenoses of Uzbekistan (Bukhara, Navoi regions) only 1.2% of sheep are infected with tyzania, with 1 to 6 copies of this parasite [2, 9].

According to a study conducted in Jizzakh region, in the mountain-mountain biocenosis, sheep are affected by tyzanniesia by 7.0%, and in the desert-pasture biocenosis by 4.0%. In the small intestine of each sheep, this cestode was found in 1-7 copies in the foothills and 1-5 copies in the desert-pasture zone [4].

In 2000-2005, sheep in Tashkent, Samarkand, Navoi, Bukhara, Kashkadarya and Surkhandarya regions surveyed did not have the causative agent of tizanieziosis [5].

The above data provide some conflicting data on the epizootiology of tizanniesiosis, in particular on its age in sheep and its variation across different zones. However, the anatomo-morphological features of its pathogen *T. giardi*, which differ from other intestinal cestodes, are not described.

According to our research, the body length of *T. giardi* reaches 4-5 meters, it is white, milky in color and firmly structured. The scolex is small in size and, like other intestinal cestodes, has no loops in the

suckers. Unlike moniesia, segmentation is not noticeable at a distance of a few centimeters (up to 35 cm) from the last neck to the scolex. The joints formed in the strobila gradually grow in width, as in the larvae of *M. expansa* and *M. benedeni*, but the width of the joints of *T. giardi* is about 7-9 mm, in some cases about 10 mm, the body is thick. The genital hole in its joints is 1 (2 in moniesia) and it is located on the left and right sides in a row. The uterus is tubular (reticulate, branched in moniesia). Before the eggs mature, the fallopian tubes first take on an elongated, then partially elongated shape. In the dorsal part of these tubes appear many tizaniezia capsules containing several eggs. 2 to 6 eggs were found in such capsules. The number of capsules is infinite, their shape is spherical or noxious. Their size, in our study, is 0.10x0.06; 0.10x0.08 mm, the size of the eggs inside the capsules is around 0.012-0.022 mm (0.18-0.027 mm in the literature), in which noxious apparatus does not develop.

The development cycle of *T. giardi* has not been fully studied, but the involvement of an intermediate master in its development is mandatory. According to the experiments of some researchers, its intermediate host is the oribatid canals, while other authors believe that this function is performed by some insects. In both cases, the larval development of the tizanieziosis pathogen occurs in arthropods that are adapted to live and reproduce on land, more specifically in slightly humid areas.

In Uzbekistan, larval forms of tizaniezia are found in some oribatid canals belonging to the genera *Schelorbitatis* and *Zygoribatula* [10].

The size and shape of *T. giardi*'s body is close to that of moniesia, so its pathogenetic properties are similar to the pathogenetic effects of moniesiosis pathogens on the host organism, but moniesiosis is most common in animals under one year of age and causes great damage to them. Tizanieziosis is more common in older sheep than in young lambs, and its pathogenetic effect on its owners depends on the intensity of the parasite's invasion.

In our study, *T. giardi* was found in sheep of all ages, but it was less common among other intestinal cestodes. Our study also found that the pathogen tizanieziosis is found in sheep, it is more common in all foothills, deserts and irrigated areas, but in irrigated and foothill areas, it occurs in all seasons of the year, and young lambs from the first month after birth. have been reported to parasitize 1 to 7 copies of *T. giardi* in the small intestine of sheep and lambs. However, it should be noted that compared to previous intestinal cestodes, sheep with typhoid fever are slightly less affected than in previous years.

Diagnosis of tizanieziosis is carried out using helminthoscopy, helminthovoscopy and diagnostic deworming methods in animal survival. *T. giardi* differs from moniesia in that the scolex is small in size, the neck is long, the strobilas are well-structured, grow uniformly in width and height, and have capsules at the end joints. *T. giardi* differs from the pathogens of avitellinosis in that the joints have a flat width and growth of the neck, the mature joints are 7-9 mm wide, short in height.

## Conclusion

It is currently the third most epizootiologically prevalent of other intestinal cestodes in sheep in terms of the prevalence of tizanieziosis. But in some foothills it has an important epizootiological community. In veterinary practice, it is necessary to establish a clear diagnosis of intestinal cestodes of sheep.

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