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**G. Shabdarbaeva, A. Ibazhanova,
Zh. Kenzhebekova, A. Balgimbayeva, L. Zhanteliyeva**

Kazakh National Agrarian University, Almaty, Kazakhstan.
E-mail: shgs52@mail.ru, laura_18_87@mail.ru

CLINICAL-MORPHOLOGY OF MONIEZIASIS IN SHEEP

Abstract. The present scientific article presents the main characteristics of sheep monieziasis, clinical and pathomorphological changes in the internal organs of 42 corpses of sheep taken from private farms of Almaty region to determine the cause of death in the period from 2015 to 2017.

Keywords: sheep, monieziasis, pathomorphology, histology, histochemistry, glycogen, enzyme, dystrophy, inflammation, parenchymal organs.

Introduction. Sheep farming provides the industry with raw materials (wool, skins, lamb), gives valuable food (meat, fat, milk). Sheep farming is one of the original activities of the Kazakh people. The Kazakh people, who paid special attention to horses and sheep among four species of livestock, formed their own methods and methods of grazing sheep, increasing their livestock and improving the breed. Currently, the number of sheep has exceeded to 17 million.

In connection with the increase in the number of livestock, the types of their diseases are also increasing today. Since invasive diseases occur in all types of domestic animals, they cause enormous damage to the national economy. Many invasive diseases, in particular, parasitic diseases, lead to mass death of animals [1, 2].

It is well known that from teileriosis and babesiosis significant damage is inflicted on cattle, besides chicken and domestic rabbits suffer from eimeriosis and numerous parasitoses, and sheep and calves often die from diktiokauloz and moniesiosis, small cattle and cattle - from fascioliasis, sheep - from the price of moroziosis. Among these diseases, helminthic diseases are common. One of these parasitic diseases is moniesiosis.

Moniesiosis of sheep - helminthiasis, caused by the adult stage of helminths, belonging to the family Aporoserialidae of the genus *Monizia*. Monkeyiosis is affected by sheep, goats, cattle, deer, yaks and other wild ruminant animals. In general, the young is more often sick [3].

Moniziosis is a widespread and annually emerging severe disease in Kazakhstan. Under favorable conditions for breeding the helminth or on farms where medical preventive measures are not adequately carried out, lambs and kids may face massive death [3, 4].

In existing literature, vaccines are offered against sheep moniesiosis and methods of treatment for the disease, and they are applied. However, the ruminant monetosis, which causes the loss of sheep, forces livestock owners to suffer losses necessary for treatment, causes great economic damage to farms, is widespread in Kazakhstan.

Despite the fact that there are many written about the disease in the literature of the far and near abroad, the CIS and Russian literature about this disease, there are quite contradictory views among them, and very few pathological and morphological changes are described.

Proceeding from this and considering that the urgency of researching the problem of this invasive disease is an industrial necessity, we decided that it would be expedient to share the results of our studies.

Materials and methods of research

Mainly as materials for research, corpses of sheep delivered in the period from 2015 to 2017 to the Department of Biological Safety of the Kazakh National Agrarian University were used to determine the cause of death. The corpses of sheep were delivered mainly from private farms in Almaty, Zhambyl oblasts. On all the corpses of sheep, a pathological anatomical dissection was performed and protocols were compiled. The diagnosis of the disease was complex: taking into account the epizootic situation, the clinical signs of the disease, based on the results of parasitological research, autopsy and histological, histochemical studies. The diagnosis was confirmed by the results of parasitological, pathological and anatomical studies. The corpses of sheep were opened by the method of Shor GV, that is, by the complete evacuation of internal organs. In general, a hematoxylin-eosin dye was used for the histological study of the pathological process in the body. And for the deep study of patch materials histochemical methods, in particular to determine the content of glycogen in the liver, kidneys, myocardium and skeletal muscles, the Schick reaction was used; To determine the degree of reaction of immune organs, RNA was studied by the Brachet method; DNA by the Felgen method; fibrin - by the method of Gram-Weigert; for the morphometric study of immune organs, the Romanovsky-Giemsa method was applied; parts of the brain were stained using the Nissl method, the enzyme acetylcholinesterase was determined by the method of Koll-Fredenwald, staining with Sudan 3 was used to determine fat and lipofuscin in frozen segments. The macro-micro images of all the internal organs examined were photographed and recorded in the logbook.

Results of the study and analysis

The clinical signs of all the 42 sheep heads studied were taken on the basis of the anamnesis data obtained from people who care for livestock, their owners, veterinarians of farms.

Clinical signs of the disease manifested itself in different ways, depending on the age, the number of infected worms and the body's resistance. In general, clinical signs were more observed in young women and lambs in comparison with adult sheep.

If in adult sheep the disease is characterized by a decrease in appetite for food, clonic and tonic abnormalities of the nervous system, general exhaustion, a disturbance in the coordination of movement, subsequently contracting lying with the head pressed against the stomach, difficulty breathing (figure 1), lambs are depleted, diarrhea, in further feces with an admixture of blood, a decrease in the appetite for food, as a result of a disturbance in the function of the nervous system, a shiver appears, motor capacity decreases, in the end they completely fall down, joints swell, mucus appears, Of the lambs examined from the rectum, there were scraps of a tape worm.



Figure 1 – One of the main clinical symptoms of the disease is paralysis and shortness of breath

7 of the investigated sheep after the appearance of a tremor in the body, they turned in one place, knocked hooves on the ground, jerked their feet and fell.

Therefore, in view of the fact that the abovementioned clinical symptoms are characteristic signs for cenotariosis, it was difficult to timely diagnose.

As a result of pathological and morphological studies, abrupt changes in the internal organs of lambs were observed. We offer the main fixed pathomorphological changes found on all investigated sheep at moniesiosis.

When autopsies from moniesiosis or sick monsters of lambs and sheep were discovered, they were all emaciated. Mucous membranes are pale, subcutaneous mucus is observed. When the abdominal cavity was opened, all animals had a congestion of the sacral in the abdominal cavity.

Mucous membranes of the mouth, eyes slightly reddened. Peripheral lymph nodes: under the jaw, before the scapula, inguinal lymph nodes - slightly enlarged, of a soft consistency, light red. Subcutaneous fat is reduced.

Skeletal muscles are light pink in color, the consistency is soft, the fibrous structure is preserved during the incision. The consistency of the tongue is softened, light pink in color, with a non-distinct structure of the fibers. The wool around the lips is moistened.

Mucous membranes of the larynx, throat of light pink color, small blood vessels between the tracheal rings are filled with blood. In the tracheal cavity a conglomeration of frothy liquid is white.

Lungs - the sizes are increased, pink color, blood vessels are filled with a blood, the consistency is dough-shaped, at a cut the internal picture homogeneous, from large bronchuses the frothy liquid flows. The upper lobes of the lungs were in a state of emphysema (figure 2).



Figure 2 – Hyperemia of the lungs and emphysema

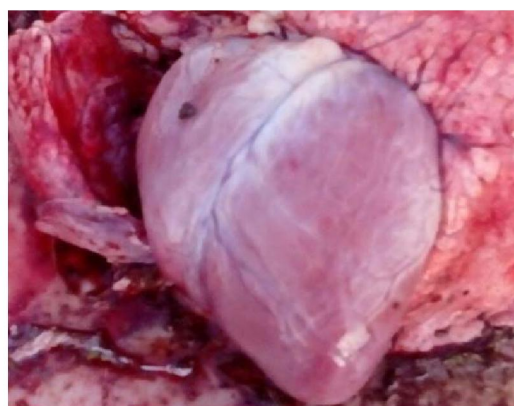


Figure 3 – Heart attack (khanaluy) and dystrophy

The heart is enlarged; under the epicardium there are small foci of hemorrhage. Myocardium is grayish-brown in color, heterogeneous in color, the consistency is soft, the heart ventricles are stretched, the cavities are filled with not hardened liquid blood. Endocardium is light gray in color (figure 3).

The form of the liver is slightly enlarged, the capsule is stretched, black-brown, from the surface of the incision is abundantly flowing not thickened blood. The picture of the internal structure is not clear, not homogeneous. The gallbladder is stretched and enlarged, filled with bile (figure 4).



Figure 4 –
Acute intestinal hyperemia and short-term liver
of the gallbladder

Kidneys - the sizes are increased, black-brown color, a consistence soft, the internal picture not precise, the capsule is removed easily.

There is little food in the stomach. The mucous membrane is wrinkled. The mucous membrane of the bottom of the stomach is swollen, with diffuse redness and excessively filled with gases (figure 5).



Figure 5 – Tympania



Figure 6 – Hemorrhagic inflammation of the intestine

Small intestine - the walls are wrinkled in a knobby form like a rosary, the mucous membrane is swollen, banded hemorrhages. At a cut of a gut in adult sheep there were more than 100, and in lambs up to 70-80 units of moniesias. The large intestine – the mucous membrane swollen, reddened (figure 6).

The size of the sebaceous lymph nodes is slightly enlarged, the color is light gray, of a soft consistency, the surface of the cut is wet, the internal picture is not distinct.

The size of the spleen is not enlarged, pink-brown, the capsule is slightly wrinkled, the internal pattern is uniform, the scraping is insignificant (figure 7).



Figure 7 – Spleen unchanged

The size of the pancreas is slightly enlarged, edematous, swollen, the blood vessels are filled with blood, under the capsule there are banded foci of hemorrhage. The foci of hemorrhage are located in the anterior part of the pancreas.

In the urinary bladder, urine is absent, wrinkled, spotted foci of hemorrhage are observed. The mucous membrane is light pink in color.

Blood vessels of the brain are filled with blood, the soft membrane of the brain is swollen. The cortex of the brain is swollen, swollen.

In connection with the fact that as a result of parasitological research, the moniesias quickly decay, the animals were opened together with the owners of livestock and veterinarians of the farms. To distinguish worms found in the small intestine, from other worms, middle limbs were taken and placed between the slides and observed with slight compression. In the study of the monocleantist, bulging mounds were seen on both sides, which are female and male genital pores.

All segments taken from the internal organs of the sheep were subjected to histological and histochemical examination, however, due to the fact that the main changes characteristic of moniesiosis need histochemical study, according to the histochemical test results: liver - the sizes of the affected

hepatocytes are increased, the shape is rounded, the boundaries the nets are not clearly marked. In cytoplasm there are granules, colored with eosin on red color.

The nuclei of such hepatocytes are changed in form, in the state of karyopicosis and karyolysis. In many cases, granular and fatty degeneration appeared simultaneously in the middle of the liver parts. In some hepatocytes, vacuoles did not stain positively on fat. In the preparations stained with black Sudan, the fat drops were painted black (figure 8).

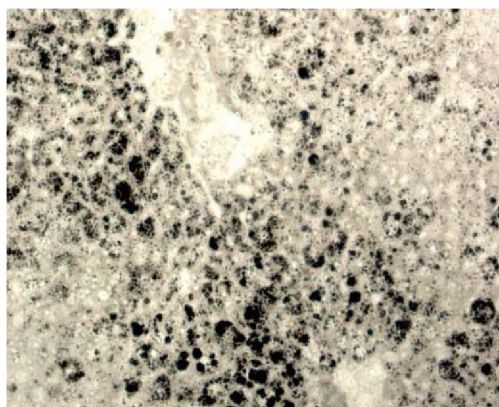
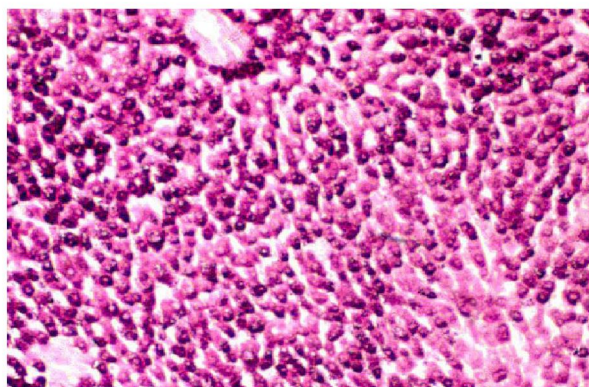
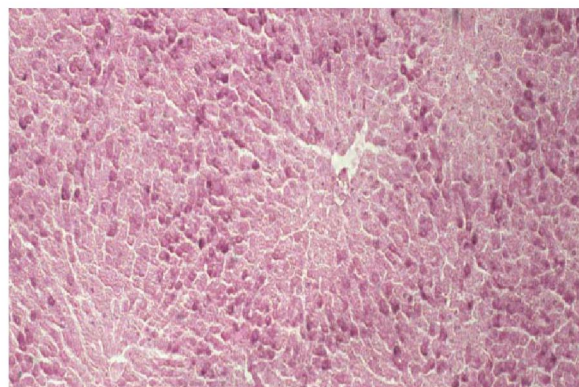


Figure 8 – Liver dystrophy. Black Sudanese paint

In hepatocytes stained according to the Schick reaction procedure, a significant decrease in the glycogen content was observed. In order to distinguish glycogen from other types of substances, a sediment of human saliva was used. When the sediment of human saliva dripped onto the preparations, glycogen dissolved (figure 9).



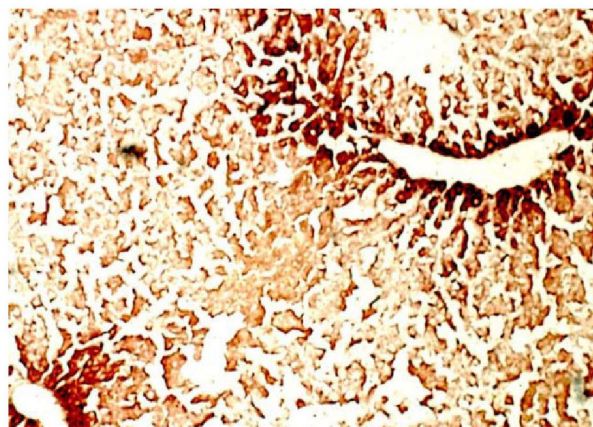
A



B

Figure 9 – A – normal level of glycogen; B – Decrease in the level of glycogen in the liver with moneziosis. Shick's reaction

Figure 10 –
Decrease in the enzyme lipid-acetylcholinesterase.
The Kell Friedwald Method



In preparations stained by the method of Koll-Fredenwald, a decrease in the activity of false acetylcholinesterase in hepatocytes was detected (figure 10).

Conclusion. During the autopsy, the main changes characteristic of the disease were observed according to clinical signs: disruption of the coordination of movement, loss of natural shine of the wool, diarrhea, decreased appetite, general exhaustion, clonic disorders of the nervous system, as well as pathological morphological changes: mucosal anemia, edema of the submuscle, granular degeneration of the parenchymal organs, enlargement of the lymph nodes, inflammation of the digestive tract, hemorrhagic inflammation of the small intestine, acute venous hyperemia and swelling of the soft, bruise pancreas. In a histochemical study, we detected fatty liver dystrophy, a decrease in glycogen and a decrease in the enzyme acetylcholinesterase.

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А. С. Ибажанова, Г. С. Шабдарбаева, Ж. Ж. Кенжебекова, А. И. Балгимбаева, Л. О. Жантелиева

Қазақ ұлттық аграрлық университеті, Алматы, Қазақстан

ҚОЙ МОНЕЗИОЗЫНЫҢ КЛИНИКО-МОРФОЛОГИЯСЫ

Аннотация. Ғылыми мақалада, 2015–2017 жылдар аралығында Алматы облысына қарасты жеке шаруа қожалықтарынан өлім себебін анықтау барысында әкелінген 42 бас қой өлекселерінің ішкі мүшелеріндегі монезиозға тән негізгі клиникалық және патоморфологиялық өзгерістер келтірілді.

Түйін сөздер: қой, монезиоз, патоморфология, гистология, гистохимия, гликоген, фермент, дистрофия, қабыну, паренхималық мүшелер.

А. С. Ибажанова, Г. С. Шабдарбаева, Ж. Ж. Кенжебекова, А. И. Балгимбаева, Л. О. Жантелиева

Казахский национальный аграрный университет, Алматы, Казахстан

КЛИНИКО-МОРФОЛОГИЯ МОНЕЗИОЗА ОВЕЦ

Аннотация. В настоящей научной статье были приведены основные, характерные для монезиоза, клинические и патоморфологические изменения во внутренних органах 45 трупов овец, доставленных из частных крестьянских хозяйств Алматинской области для определения причины гибели в период с 2015 года по 2017 год.

При вскрытии наблюдались основные характерные для заболевания изменения по клиническим признакам: нарушение координации движения, потеря натурального блеска шерсти, понос, снижение аппетита, общее истощение, клинические нарушения нервной системы, а также патологические морфологические изменения: анемия слизистых оболочек, отек под мездрины, зернистая и жировая дистрофия паренхиматозных органов, увеличение лимфатических узлов, воспаление пищеварительного тракта, геморрагическое воспаление тонкой кишки, острая венозная гиперемия и набухание легких, кровоподтек поджелудочной железы. При гистохимическом исследовании мы выявили уменьшение гликогена в печени и уменьшения фермента ацетилхолинэстеразы и его превращения в холинэстеразу.

Ключевые слова: овца, монезиоз, патоморфология, гистология, гистохимия, гликоген, фермент, дистрофия, воспаление, паренхиматозные органы.

Information about the authors:

Shabdarbaeva G. – professor; e-mail: shgs52@mail.ru;

Zhanteliyeva L. – PhD doctoral student of the 2 nd course "Biological safety"; e-mail: laura_18_87@mail.ru ;

Ibazhanova A – associate professor;

Kenzhebekova Zh – associate professor;

Balgimbayeva A – assistant.