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## CLINIC AND TREATMENT OF DIPLOCOCCOSIS IN LAMBS

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**Abstract:** This scientific article describes cases of mixed diplococcosis and pasteurellosis infections in lambs, the dynamics of their spread, disease diagnostics, clinical signs, as well as methods of prevention and treatment.

**Keywords:** diplococcosis, epizootology, preventive measures, pathological anatomy, antibiotic.

**Аннотация:** В научной статье описаны заболеваемости диплококкозом у ягнят, динамика их распространения, патоморфология заболевания, клинические признаки, методы профилактики и лечения.

**Ключевые слова:** диплококкоз, динамика, патоморфология, эпизоотология, профилактические мероприятия, патологоанатомия, антибиотик.

**Relevance of the Topic.** In our Republic, alongside other industries, animal husbandry is developing rapidly. Changes in livestock management systems and technologies, as well as the import of productive sheep breeds from abroad, have led to the emergence of various diseases in sheep and changes in their epizootology. This necessitates the improvement of treatment and prevention methods, the development of measures adapted to modern conditions, and the creation of locally sourced medicines and technologies to reduce imports. Particularly important is the study of the spread of diseases like pasteurellosis, colibacteriosis, and diplococcosis, the development of effective preventive and therapeutic measures to combat them, and their practical application.

The decree of the President of our Republic, Sh.M. Mirziyoyev, dated January 28, 2022, No. PF-60 "On the Development Strategy of New Uzbekistan for 2022–2026", the Cabinet of Ministers resolution dated July 23, 2018, No. 564 "On Measures for Further Development of Veterinary Drug Production" and other legal acts are crucial for accomplishing these tasks.

The strategy for the development of Uzbekistan sets out objectives for accelerated agricultural development, especially livestock production, livestock health protection, production of eco-friendly products, veterinary service improvement, livestock development, and ensuring the domestic market is supplied with meat and dairy products. Another important goal is to conduct scientific research on the selection of highly productive, disease-resistant animals adapted to local soil and climatic conditions, as well as the integration of modern information and communication technologies and scientific advancements.

**Research.** Our studies investigated the spread dynamics of diplococcosis among lambs in the Jizzakh, Samarkand, Kashkadarya, and Navoi regions, as well as

the hematological and morphological changes in the blood of sheep infected with diplococcosis and the cultural-morphological characteristics of the causative agents in laboratory conditions.

In 12 out of 15 farms in the studied regions, various forms of diplococcosis were identified, while 3 had cases of salmonellosis, colibacteriosis, and pasteurellosis. The average incidence rate of diplococcosis was 13%, with a mortality rate of 5.5% among infected animals.

In sheep farms in Samarkand, Jizzakh, Kashkadarya, and Navoi regions, the prevalence of diplococcosis among lambs reached up to 2.6% in winter, 4.5% in summer, and 7.5–10.2% in spring and autumn. In the examined farms, 24,000 lambs were inspected, among which 1,480 showed clinical signs of the disease, including elevated body temperature. Pathoanatomical examination of 145 lambs revealed diplococcosis in 95 of them based on bacteriological tests. Clinical and pathological changes in lambs with diplococcosis showed distinctive features, often involving fibrinous exudate accumulation in the abdominal cavity, croupous-necrotic pneumonia, pleuropneumonia, catarrhal-hemorrhagic inflammation of the stomach and intestines, congestion, and hemorrhages in the liver, kidneys, spleen, and abomasum. The severity of the pathological process depended on the virulence of the pathogens. In mixed forms, clinical signs varied depending on disease progression and pathogen virulence.

**Diagnosis.** Diplococcosis diagnosis is based on epizootiological data, clinical signs, pathological dissections, bacteriological studies, and pathogen identification.

In laboratory conditions, diplococcosis pathogens were introduced to lambs, and hematological and morphological changes in their blood were studied. The experiment showed a decrease in hemoglobin levels, a reduction in erythrocytes from 8.3 to 3.8 million, and an increase in leukocytes from  $6.0 \pm 0.24$  thousand to  $10.9 \pm 0.62$  thousand. Blood clotting time increased by 1.8 minutes, while ESR slowed by 1.1 minutes after 60 minutes. A reduction in the erythrocyte count led to a decrease in hemoglobin levels. Leukocytosis doubled, ESR increased by 2.2 mm, and blood clotting slowed by 5.5 minutes with a 0.7% increase in the retraction index.

**Pathological Changes in Natural Conditions.** Under natural conditions, pathological examinations of all external and internal organs were conducted on lambs with diplococcosis. The following pathological changes were identified:

**Heart:** Myocardial coronary vessels were dilated, full of blood, with multiple hemorrhages observed around muscle fibers. Perivascular spaces were greatly dilated and swollen. Rod-shaped microorganisms were visible in some areas around the vessels. Structural changes in myocardial vessel walls were irregular: in many cases, vessel walls were edematous, endothelial cells were hypertrophied and desquamated. Myocardial muscle fibers showed signs of granular dystrophy (cytoplasm was edematous, nuclei poorly stained with hematoxylin). Leukocyte and histiocyte infiltrates were noted in intermuscular spaces in some lambs, indicating significant pathological changes in the heart parenchyma during mixed infections.

**Lungs:** In lambs' lungs, signs of circulatory disruption were observed. Most alveolar spaces were filled with erythrocytes, respiratory capillaries were dilated and

full of blood, and some areas exhibited blood stasis and focal hemorrhages. In some regions, veins appeared swollen, and connective tissue surrounding them was loosened and partially homogenized. As a result, alveolar septa thickened. These findings indicate the development of hemorrhagic pneumonia.

**Liver:** The liver showed pronounced histological changes, including circulatory disruptions, dystrophic processes, and inflammation of vascular walls. Many interlobular capillaries in the liver parenchyma were dilated and full of blood. Hepatic trabeculae thinned, with some areas showing atrophy. Focal hemorrhages appeared as limited clusters, and the lumens of many vessels contained only blood plasma. Some liver parenchyma showed vacuolization phenomena. Hepatocyte nuclei in these areas were discolored, with chromatin breaking down into small granules.

**Spleen:** The blood vessels and red pulp of the spleen were full of blood, with trabeculae swollen and loosened. Arteries and veins showed varying degrees of dilation. The adventitial layer of the vascular walls thickened, partially loosened, and fibers were homogenized. Some spleen sections revealed yellowish granules containing iron-containing pigment hemosiderin, indicative of erythrocyte hemolysis. Hence, histological changes in the spleen were significant, with predominant hemodynamic disruption.

**Lymph Nodes:** Histological examination of lymph nodes (submandibular, mediastinal, elbow, and others) in lambs revealed various pathological processes. Vessel dilation, focal hemorrhages, and accumulations of blood elements around vessels were clearly visible in peripheral and central sinuses. In some nodes, intense hyperplastic processes led to an increase in lymphocytes, giving such lymph nodes the appearance of dense cell clusters. In most cases, the absorption of edematous fluid by vessel walls caused their thickening and the formation of perivascular edema.

**Treatment.** Antibacterial drugs such as oxytetracycline, nitox, doxylox, hyperimmune serum (1.5–2 ml/kg), and symptomatic treatments were used, showing good results.

**Conclusion.** Timely and proper drug administration ensures effective treatment of diplococcosis in lambs up to 90%. The use of hyperimmune serum in combination with nitox enhances treatment effectiveness.

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