



PATHOLOGICAL STUDIES OF GUINEA PIGS WITH EXPERIMENTAL BRADZOT

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Resume: *The article presents the results of experimental studies on guinea pigs for infection with a local strain of the causative agent of bradzot. The development of pathoanatomical and morphological changes at the level of tissues and cells is outlined. The importance of timely diagnosis in the fight against this infection is highlighted.*

Key words: *bradzot, disease, pathological material, pathomorphological studies, experiment, fixation, paraffin, histology, histosections, Cl. Oedematiens.*

For the accelerated development of astrakhan breeding, which is one of the main ones in animal husbandry, in order to obtain a healthy offspring and increase the productivity of the industry, it is necessary to properly keep sheep and protect them from various diseases. A serious obstacle in this case is the bradzot of sheep, which is often found in subjects engaged in astrakhan breeding and in the personal courtyard of the population of Uzbekistan.

Mostly well-fed and inactive animals, regardless of breed, sex and age, get sick. The disease is observed in all seasons (more often in the cold season) of the year. The main reasons contributing to the emergence of bradzot are sheep grazing on pastures in late autumn, winter and early spring in the presence of frost and dew, a decrease in the body's resistance due to animal diseases with various helminth infections, as well as a lack of proteins, vitamins and minerals.

The disease proceeds at lightning speed or superacutely, while in the body of the animal the pathogen releases a strong toxin, as a result of which sheep die very quickly (within 20-30 minutes, sometimes 2-8 hours). The very large economic damage caused by bradzot is made up of the disease of 30-35% of the sheep in the flock, the mortality rate of which reaches 90-100%, the destruction of products and raw materials from the fallen and forcedly killed animals due to their worthlessness, as well as the cost of preventive measures.

The causative agent of the disease - Cl. Oedematiens is a mobile anaerobe; it forms spores in the external environment and in the body of dead animals. The spores of the pathogen enter the body of healthy animals with food, water, soil and manure. The spores of the pathogen bradzot are highly resistant to external stimuli, as a result of which they are constantly in the external environment and their destruction is almost impossible.

For effective confrontation with this disease, it is necessary, first of all, to study the epizootology of sheep bradzot, timely and correct diagnosis and improvement of preventive measures. In this regard, the isolation of local strains of Cl. Oedematiens from pathological material from households that are unfavorable for this disease, as well as the study of the cultural, morphological, biological and pathogenic properties of this pathogen.

Materials and research methods.

In some farms of Kashkadarya, Samarkand and Jizzakh regions, pathological material (liver, kidneys, lungs, heart, spleen, duodenum, abomasum and bone marrow) was taken from animals that died on suspicion of bradzot, as well as diagnostically forcedly slaughtered sheep, which was



subjected to thorough microbiological studies in the laboratory of the Research Institute of Veterinary Medicine, and the causative agent of sheep bradzot was isolated. For identification, isolated pure culture as *Cl. Oedematiens*, the cultural-morphological, tinctorial, biochemical and biological properties of this pathogen strain were carefully studied.

To determine the 50 and 100 percent lethal dose of our culture of *Cl. Oedematiens*, a biological sample was made on 16 heads of guinea pigs with a live weight of 300-350 grams. For this, laboratory animals were divided into 4 groups of 4 animals each. The first three experimental groups were infected with a daily culture of *Cl. Oedematiens*, isolated from the pathological material brought by us and grown on the Kitt-Tarozzi medium, into the abdominal cavity at the doses indicated in the table below. Group 4 of laboratory animals was not infected and served as a control.

Results of studies to determine the lethal dose of the *Cl. Oedematiens* strain for guinea pigs.

Groups	Number of goals	Dose of infection, ml	Bioassay results (heads, %)		
			Perished	Survived	Lethal dose
1-experimental	4	0,26	2	2	LD ₅₀
2- experimental	4	0,28	3	1	LD ₇₅
3-experimental	4	0,30	4	-	LD ₁₀₀
4-experimental	4	-	-	4	-

Research results: Guinea pigs of the experimental and control groups were under clinical observation for ten days. In laboratory animals of the experimental groups infected with the bradzot pathogen, after 12-14 hours after infection, clinical signs of the disease began to appear. At the same time, an increase in body temperature up to 41.5 °C, dullness and symptoms such as rapid heartbeat, loss of appetite and inactivity were recorded. The guinea pigs, which developed clinical signs of the disease, died after 48-52 hours in a severe coma. Thus, experimental studies have established that for guinea pigs infected intraperitoneally with a daily culture of a local strain of the pathogen bradzot, LD₅₀ is 0.26 ml, and when infected at a dose of 0.30 ml of the culture, all laboratory animals die (LD₁₀₀).

The pathological anatomical picture of the autopsy of laboratory animals that died as a result of experimental infection was characterized by the presence of an unpleasant odor and rapid swelling of the corpse of guinea pigs, slight pulling of the coat from the skin, and filling of the abdominal cavity with fluid. The small intestine is filled with gases, the inner walls of the intestines and stomach are prone to hemorrhages, the heart shirt contains a yellowish liquid, the heart ears are blackened. There are multiple petechial hemorrhages on the lungs and liver, the capsule of the kidneys is easily separated, the spleen is enlarged.

From the internal organs (lungs, heart, liver, kidneys and spleen) of guinea pigs subjected to laboratory tests, pathological material was taken in the form of pieces 0.5-1 cm³ in size at the border of healthy and damaged tissue for further morphological studies.

All dead guinea pigs after post-mortem examinations and taking pathological material were destroyed by incineration. The cages in which the laboratory animals were kept, as well as the sites of pathological anatomical autopsies, were disinfected with 10% sodium hydroxide solution and 3% Lysol solution.

In order to make a reliable diagnosis in experimental bradzot, the main attention was paid to bacteriological examination of guinea pigs. At the same time, the basis for the initial diagnosis was the clinical signs and pathoanatomical picture found in guinea pigs, as well as epizootological data (intraperitoneal infection with the causative agent of bradzot). Of decisive importance for the



establishment of a reliable diagnosis in our studies was again (repeated) isolation of *Cl. Oedematiens* from the pathological material of guinea pigs and its identification based on the results of the study of morphological, tinctorial, biochemical and pathogenic properties.

Pathological material for bacteriological studies were samples taken from fallen experimental guinea pigs (heart, lungs, liver, kidneys, spleen and tubular bones).

Along with these studies, pathological material taken from the internal organs of experimental animals was subjected to pathomorphological studies to study changes at the tissue and cellular levels. For this, the organ pieces were fixed in 12% formalin solution, 96% ethanol, in Mueller and Carnoy fluids, and then were embedded in paraffin. From all the fixed pieces on a sledge microtome, sections were obtained, which were stained for further histological and histochemical studies by several methods: hematosilin-eosin, Sudan-3, Weigert and Perls.

During histostudies of the obtained sections, very pronounced changes in the hemocirculatory nature were established. At the same time, in the lungs, as a result of increased permeability of the walls of blood vessels, in many alveolar spaces, along with erythrocytes and leukocytes, fibroblasts, histiocytes, and small tissue pieces are observed. Similar changes in the hemodynamic system have also been established in the structural structure of the heart muscle.

Changes in the hemocirculatory system of the central veins and interlobular capillaries of the liver are characterized by destruction and necrobiosis of the walls of blood vessels, while some of the hepatocytes are subjected to granular degeneration, necrobiosis and necrosis.

Changes in the structural structure of the walls of the gastrointestinal tract are more pronounced, which are observed in the form of expansion and plethora of blood vessels, the development of perivascular serous edema and focal extravasation, which also indicate a deep development of vascular reactions.

Conclusion.

1. Laboratory studies conducted on guinea pigs infected intraperitoneally with a local strain of *Cl. Oedematiens*, isolated from sick sheep on the territory of Uzbekistan, it was found that for guinea pigs, a 50% lethal dose of the pathogen is 0.26 ml of culture, and a dose of 0.30 ml causes 100% mortality.
2. In acute experimental bradosis in guinea pigs, the autopsy pathological and anatomical picture is characterized by the following: gas formation in the small intestine, hemorrhages on the inner walls of the stomach and intestines, blackening of the heart ears and fluid accumulation, numerous petechial hemorrhages on the lungs and liver, and an increase in the volume of the spleen.
3. The picture of pathomorphological changes in the internal organs, especially in the gastrointestinal tract, in experimental laboratory animals is expressed as a strong vascular reaction, characterized by deep hemorrhagic and catarrhal-hemorrhagic processes.

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