ETIOLOGY, PATHOGENESIS OF NECROBACTERIOSIS DIAGNOSTIC, PREVENTIVE AND TREATMENT METHODS

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Annotation: The article presents information about the etiology,pathogenesis, distribution, pathogenetic characteristics of the pathogen Fusobacterum necrophorum, clinical symptoms,diagnostic methods, recommendations for treatment and prevention.

Аннотатция: В данной статье представлена сведения об этиологии,патогенезе распростра-нении, патогенетической характеристике возбудителя Fusobacterum necrophorum,клинической симптоматике, методах диагностики,рекомендации по лечению и профилактике.

Key words: Necrobacteriosis, Necrobacillosis, polymorph, spore, capsule, etiology, pathogenesis, penicillin, ramicidin, osteitis, osteomyelitis, vaccine, disinfection, desmurgia.

Relevance of the topic. The development of the livestock sector depends to a large extent on the breed, productivity and, most importantly, the health of livestock. Today, veterinary workers are given new tasks, that is, they are used in the treatment and prevention of various diseases in farm animals. it requires the use of new drugs and the use of new, modern methods and tools in the normalization of pathological processes. From the analysis of literature data and personal observations, it is known that the weight of non-infectious diseases among cattle is high (66-88%), of which hoof diseases make up 10-20%. For example, dairy cows have hooves. 70-80% productivity indicators are reduced due to damage. In addition, as a result of injuries, the body's resistance and susceptibility to infection increases, causing infectious and invasive diseases. As a result of hoof injuries, breeding bulls are impaired, they are quickly transferred to meat. It becomes difficult to raise healthy young animals. All this leads to economic damage.

Necrobacteriosis disease. (lat. Necrobacteriosis, Necrobacillosis) is an infectious disease of agricultural, domestic and wild animals and poultry, usually characterized by the development of purulent-necrotic processes in the hooves of animals.

In some cases, this process can be located in the animal's oral cavity, udder, genitals, liver, lungs, kidneys and other organs and tissues. It is mainly a wound disease.

Economic damage of the disease. The economic damage caused by

necrobacteriosis is great. Mortality reaches 70-75%, sick animals lose weight. The milk of dairy cows decreases sharply. Treatment and prevention require a large amount of funds.

Pathogen. Fusobacterum necrophorum is inactive, does not form spores and capsules. Strictly anaerobic and very polymorphic microorganism. The causative agent releases hemotoxin.

Endurance. The activator is kept active in manure for 40-50 days, in water and urine for 15 days, in milk for 35 days, and in wet soil for up to 3 months. In a building contaminated with the pathogen, the bacterium dies in 2 days at 18°C, 15 minutes at 60-65°C heat, 1 minute at 100°C, and 8-10 hours in sunlight. Sulema (mercuric chloride) diluted 1:2000 and 40% formalin in 20 minutes, 1% potassium permanganate and 5% caustic sodium and potassium inactivate it in 10 minutes. Under the influence of oxygen in the air, the bacterium dies in 4 hours. Penicillin and gramicidin do not affect this bacterium at all, but it is very sensitive to tetracycline antibiotics.

Disease causes and spread. The disease affects all kinds of animals, including cattle. Animals of all ages, but young animals are more affected. The main reason for this is that the skin of young animals is thin and loose, so they are prone to injury. The quantity and virulence of the host are of great importance. The source of disease spread is sick and recovered animals. The causative agent of the disease lives in the gastrointestinal tract of ruminants, wild animals, rodents, and birds, and spreads widely in the external environment (livestock buildings, hay bales, manure, soil, pastures, stagnant water bodies). The causative external environment from the diseased animal is skin and tissues with gangrene, oral and nasal cavity, saliva, and is released through the back hole and soil, grass, hay, feed, to 'shama and all surrounding objects ifl oslans. The disease develops in the rainy months of the year, that is, in late autumn, winter and early spring.

The course of the disease. Because healthy tissues are well supplied with blood and oxygen, this bacteria does not develop in them. The bacterium begins to develop very quickly in an anaerobic environment due to a violation of the oxygen supply of injured tissues through the blood. In the process of reproduction, they secrete toxins, lyse (dissolve) healthy cells, and strong inflammation begins in that place. Enzymes released from cells contribute to the development of this process. Necrophorum bacteria enter the blood and lead to a septic process. the diseased animal dies as a result of the development of necrosis processes in them due to circulation or spread to internal organs.

Microorganisms that fall on the feet produce purulent exudate, due to soil, mud and other impurities, a coating is formed in this place, and an anaerobic environment is created. In such conditions, bacteria can easily grow and develop.

Clinical signs and forms of the disease. It is semi-acute and chronic in older

animals, and acute in young animals. The latent period of the disease lasts 1-3 days. Necrobacteriosis is manifested in animals in 4 forms: skin and subcutaneous tissues, mucous membranes and subcutaneous tissues, internal organs, osteomyelitis and osteomyelitis (bone necrobacteriosis). Skin necrobacteriosis is the most common form of the disease. It is located in the outer skin tissue of the body, mainly in the legs of the animal (Fig. 1).

Fig. 1. Clinical presentation of necrobacteriosis in large animals.

It is found on the neck, body and udder of cattle, navel, ear tip and tail of young animals. It is observed more often on the hind legs, first on one, then on the other. The pathological process begins in a small wound or in a sore spot. The area becomes red and swollen. The animal drags the sick leg. He is usually lethargic, has no appetite, body temperature returns to 40oC. Then it goes up and down. This condition lasts for 1-2 days and then returns to normal. Then the limp begins. The inflammatory process on the surface between the hooves spreads to the core of the hoof. When palpated with a hoof, it feels pain, the skin is red and swollen. If the pathological process is severe, phlegmonous inflammation is observed and it covers the deeper muscles, tendons and ligaments of the hoof. A pus-filled, foul-smelling wound forms there. The hoof falls, wounds appear around and between it. The disease continues for months, and the necrotic process becomes stronger. A purulent necrotic foci appears in the lungs and liver. Necrobacteriosis of mucous membranes is mainly noted in the form of necrotic stomatitis in newborn young animals at one week of age. In very rare cases, it is observed in adult animals. Necrotic inflammation is visible in the mucous membranes of the oral cavity, nose, gums, tongue, genitals and intestines. Injuries to the mucous membranes of the mouth, tongue and jaw occur when teeth erupt in young animals. Then the mucous membranes of the throat, larynx, nose, and larynx are added to the pathological process. Necrotic ulcers appear on the nose, gums and hard palate, lips and jaw. The animal stands with its mouth open and its breathing

quickens. A foul smelling saliva flows from the mouth. The pathological process spreads to the teeth, periostitis and periodontitis begin, and teeth begin to fall out. The injured tongue protrudes from the mouth. A sick animal usually dies in 7-10 days due to sepsis and cardiac arrest (Figure 2).

Figure 2. General condition of the diseased animal.

Necrobacteriosis of internal organs is manifested by high body temperature and severe diarrhea (faeces are green-gray). There is severe pain in the abdominal cavity, especially in the area of the liver. It is determined that the hair is wrinkled and the stomach is stretched. Animals with necrotic enteritis are slaughtered because it does not heal. In cows, the necrosis of the mucous membrane of the genital organs is visible in the first days after giving birth. They are mainly affected by a trigger when an obstetrician gives birth or when the birth process is difficult. Necrobacteriosis in cows is detected mainly in the genitals and legs at the same time. In some cases, cows are infected during the period of estrus, and abortion is observed in them at the 8-9th month of the embryo. Then the placenta is retained, chronic metritis and endometritis are detected.

Bone necrobacteriosis-osteitis and osteomyelitis occur in cattle aged 6 months to 3 years. Necrosis bacteria are abundant in the red marrow and scaly part of the bone. Necrotic process in all tubular bones of the legs and spine develops at the stage. The disease is characterized by limping, rapid pulse, and an increase in body temperature up to 41o C. The affected leg cannot be bent, it is very painful to press on the ground. Later, the bone becomes bulging, the muscles on the surface of the bone become swollen, the animal loses weight, and alternating fever is observed.

Pathologoanatomical changes. In cattle, the foci of necrosis are mainly located in the lower part of the legs and hooves. When necrotic areas are cut, a mass of

greenish-gray, brownish purulent dead tissue is visible, in some cases they are in a cheesy state. The process of necrosis may have spread from the skin to the muscles, tendons and ligaments, and even to the bone. In this case, the bone has turned into a loose, rapidly decaying gray mass. The causative agent of the disease, i.e., the bacterium, poisons the body through the respiratory tract and damaged skin or mucous membranes. , metastases appear in internal organs. The disease is chronic in older animals, and acute in young animals.

(Figure 3).

Figure 3. Pathological surgeries on hooves and their treatment.

Cachexia and emaciation are observed in the bodies of animals where the necrosis process is located in the mucous membranes of the mouth. Necrotic foci are visible in the throat, larynx, tongue, gums, and palate. The back of the throat and bronchial lymph nodes are enlarged and filled with blood. If the necrotic process develops in the genitals, pathological-anatomical changes are observed in this place. Diagnosis. The initial diagnosis of the disease is made on the basis of clinical signs, epizootological data and pathomorphological changes. The final diagnosis is made by laboratory methods. For this purpose, necrotic parts of internal organs and healthy tissue are sent for examination. The material is shipped quickly or preserved in 40% glycerol. Differential diagnosis. Necrobacteriosis should be distinguished from protein, smallpox, plague, viral diarrhea, contagious pleuropneumonia diseases.

Treatment. Sick animals are separated from healthy animals and treated individually and collectively. If the injured area is on the leg, it is thoroughly cleaned of dead tissue, pus, and a disinfectant solution (2-3% perhydrol, 1% potassium permanganate, 3-5% copper sulfate, 1% trypoflavin solution in alcohol, treated with ASD drug). Then one of the antibiotic ointments is applied. When the hooves are

severely damaged, it is good to pass the animal through disinfectant baths containing 3-5% formalin, 2-3% creolin, 2-3% zinc and copper sulfate. 0.02-0.03 g/kg of live weight of antibiotics can be administered to sick cattle for 3-4 days with water or 4 mg/kg intramuscularly for 3-4 days. If the necrobacteriosis wound is located on the mucous membrane of the oral cavity, 3% perhydrol, 3-5% zinc, copper sulfate solutions, 5% iodine tincture, 1% potassium permanganate solution are used for its treatment. When the skin of the lips is injured, applying iodine-glycerin, syntomycin, biomycin or other antibiotic ointment, in addition to the above-mentioned preparations, has a good effect. The wound is treated open, without dressings (Figs. 4-5).

Immunity. Nekovak, an inactivated vaccine against necrobacteriosis of cattle, created by Russian scientists (A.A. Sidorchuk et al.) in 1997 to create active immunity in the body, has achieved a sharp reduction (from 30-50% to 1-2%) of this disease in unhealthy farms. The vaccine is administered to the animal 2 times under the fold of the skin above the knee, 5 ml in one leg, 25-30 days later in the other leg in the same dose.

Figure 4. Hoof handling and treatment methods.

Figure 5. Medicines for the treatment of the disease.

Immunity is formed in 15-20 days and lasts for 6 months. Depending on the epizootic situation, revaccination is carried out after 6 months.

Measures to prevent and combat the disease. In order to prevent the disease in the farm, it is necessary to implement the following complete measures: to protect a healthy farm from the pathogen, to keep newly arrived animals in a preventive quarantine for 1 month, to constantly increase the resistance of animals keeping at a high level (feeding with nutritious and vitamin feeds, creating normal zoohygienic storage conditions, protection from various poisonings and non-infectious diseases). Buildings where animals are kept, playgrounds, places where patients are kept are cleaned of manure and 3-5% formalin , disinfected with 5-10% hot caustic soda or 5% active chlorine lime at the rate of 1m2 /10 l. When necrobacteriosis is detected among cattle in the farm, special water baths (dizabarers) are organized for treatment and prevention of the disease, where the 1st pool is plain water, the 2nd pool is 3-5% copper sulfate, the 3rd pool is 2-3% creolin solutions. a water bath was used (Fig. 6).

Figure 6. Overview of special water baths (disabarers) for disease prevention and treatment: 1st pool is plain clean water; Pool 2 is 3-5% copper sulfate solution; Pool 3 is filled with 2-3% creolin solutions.

Recommendations for practice: Necrobacteriosis disease is currently found in many breeding and fattening farms, causing great economic damage with a sharp decrease in milk yield and significant weight loss of animals. Therefore, in order to prevent the disease in each farm, it is necessary to implement the following comprehensive measures:

- protection of a healthy economy from pathogens;
- keeping newly imported goods in preventive quarantine for 1 month;
- keeping the resistance of animals at a high level (feeding with nutritious and vitamin feeds);
- creation of normal zoohygienic storage conditions;
- protection from various poisonings and non-infectious diseases;
- cleaning buildings where animals are kept, playgrounds, places where sick animals are kept from manure;
- Disinfection, disinsection, deratization activities should be carried out regularly.

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