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DIAGNOSIS AND TREATMENT METHODS OF MASTITIS (Literature review)

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Abstract:
The article presents an analysis of literature data on methods of treatment and prevention of mastitis in pedigree cows.

Keywords: Mastitis, anamnesis, express diagnostics, lactose, protein, mastidine, dimastin, leukocytes, erythrocytes.

Introduction

Currently, in many countries of the world, milk and dairy products play an important role in meeting the population's need for protein, a unique nutrient, and in improving the composition of consumed food products. Therefore, special attention is paid to the development of the dairy industry in our country. Based on the resolutions of the President of the Republic of Uzbekistan No. PP-4576 "On Additional Measures of State Support for the Livestock Sector," No. PP-5017 "On Additional Measures for Further State Support of Livestock Sectors," No. PP-187 "On the Fundamental Improvement of the System of Personnel Training in the Field of Veterinary Medicine and Livestock," meeting the demand of the country's population for livestock products, further increasing the volume of production of meat, milk, eggs, and other products in the domestic consumer market, as well as ensuring the stability of their prices, is one of the important tasks. In the process of implementing these tasks, it is important to improve cattle breeds, enrich and preserve the gene pool. Therefore, in recent years, important measures have been taken for the further development of livestock farming,

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economic reforms have been carried out, and dehkan (farmer) farms and privatized livestock farms are being created.

Relevance of the topic. In recent years, mastitis among dairy cows has become one of the main problems in our country, causing significant economic damage as a result of the premature destruction of cows, a decrease in milk productivity, a deterioration in its quality, an increase in the incidence and mortality of newborn calves, as well as expenses for the diagnosis, treatment, and prevention of this disease. It should be remembered that mastitis of cattle, along with causing significant economic damage, can also cause serious social problems. That is, there are cases of mass food poisoning of people, especially young children, from the consumption of milk and dairy products containing pathogenic microorganisms and their metabolic products.
Therefore, research aimed at improving the methods of diagnosing mastitis, finding new, more effective therapeutic drugs, as well as developing and improving schemes for their use in the treatment of catarrhal-purulent mastitis, is relevant.

Diagnosis of mastitis. Clinical indicators for studying the properties of the udder, parameters and diagnostics of mastitis include obtaining an anamnesis, determining the general condition of animals, examination, determining the state of udder properties by palpation, and using trial milking methods. Laboratory methods are most often used to detect latent mastitis (Voskoboynikov V.M., 1981; Simetsky O.A., 1982; Studentsov A.P. et al.).
When cows are suspected of having mastitis, the process begins with examining the animal and measuring body temperature. Then the examination of the mammary glands, lymph nodes, and reproductive organs is carried out. Anamnestic data about the animal are also used to determine the nature of the inflammation. When examining the udder, special attention is paid to the size, symmetry, and shape of the udder, as well as the color and integrity of the skin. The degree of manifestation of the pain reaction, the structure and strength of the glands are determined. Such an examination should be carried out before and after milking to identify qualitative changes. Also, during the examination, attention is paid to the peculiarities of breast secretion: color, smell, strength, presence of pathological signs (Kuzmin G.N., 2004; Limareno A.A. et al.).

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According to researchers, trial milking allows for the daily diagnosis of clinical forms of mastitis. Testing of the first milk stream is carried out in a special mug with a black plate inside and a hole for draining milk, which makes it easier to diagnose the clinical condition of mastitis as a result of characteristic changes in the udder and the appearance of secretions (Belkin B.L. et al., 2015).

Laboratory methods include express diagnostics of latent mastitis using microbiological parameters for the study of milk. Methods for express diagnostics of mastitis include: determination of the amount of somatic cells in milk (more than 500 thousand/ml), the amount of lactose, protein, some enzymes, chlorides, using a sediment test (characterized by the presence of sediment). Determination of the nature of the reaction of milk with changes in pH (alkalinity properties) parameters and electrical conductivity (electrometric) parameters, mastidine, dimastine parameters, or other diagnostics (characterization by parameters of the features of color change due to changes in pH parameters) and an increase in the number of somatic cells - leukocytes.

Somatic cells in milk and their significance in the diagnosis of mastitis are important. Somatic cells are cells of various organs and tissues, primarily imported from leukocytes, erythrocytes, cylindrical cells, and the squamous and cuboidal epithelium of the mammary gland. 96% of somatic cells are white blood cells (leukocytes). By determining the concentration of somatic cells in milk obtained from each quarter of the udder, it is possible to determine whether a cow has mastitis and its type. When the amount of somatic cells in milk is from 50 thousand to 200 thousand per 1 ml of milk, the cow is healthy (this indicator can be from 50 thousand to 200 thousand per 1 ml of milk depending on the cow's age and type of feeding), and when the concentration is from 201 thousand to 400 thousand per 1 ml, it indicates the presence of inflammation in the mammary gland. A somatic cell concentration from 401,000 to 800,000/ml indicates subclinical mastitis, and above 800,000/ml indicates the development of clinical mastitis.

To diagnose mastitis using a dimastin sample, a special lactic plate with a depression was taken, 1 milliliter of milk was drawn from each part of the mammary gland (the sample was taken from the last portion of milk) and 1 milliliter of 5% dimastin solution was added to it. Then the milk in each cavity is mixed with dimastin using a glass rod. If milk infected with mastitis is obtained, a viscous clot forms, and the mixture turns red. The mastidine sample is

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performed similarly to the dimastine sample. The reaction outcome is evaluated based on the thickening of the mixture formed after adding mastidin to milk. If the reaction is positive, the mixture thickens like chicken egg white and turns purple. If the reaction is negative, the color of the mixture becomes light purple.

Methods of treating mastitis. Treatment of sick animals with breast dysfunction should be complex with the use of etiotropic, symptomatic, preventive, and pathogenetic therapy. The effectiveness of treatment depends on the timing of the start of therapy, which should be established when the first symptoms of the disease appear. Increasing therapeutic effectiveness is achieved through the combined use of agents that increase the resistance of the cow's body. The complex of measures includes antibacterial, antimicrobial drugs, as well as agents that increase and improve the regulation of nervous activity, immunobiological resistance, cardiovascular activity, metabolic processes, and other body systems. Treatment of cows with this pathology should become part of the system in the complex of health-improving measures (Hogan. L.S. Pillet. F.T.).

Depending on the prevalence of the pathology, it is necessary to use a rational and optimal pharmacotherapy algorithm. The use of effective schemes for the diagnosis, treatment, and prevention of mastitis in cows reduces the incidence of the disease and improves the quality of milk production. The use of drugs with intrasternal administration contributes to rapid recovery and significantly reduces costs when detected in the early stages of pathology development. Additional intramuscular administration of antibacterial drugs increases the effectiveness of therapy (Shabunin, S.V., Skogoreva, G.M., Perrin, P.A.).

There is data on the study of the effect of low-frequency current on the body of cows in the treatment of acute mastitis, the use of which contributes to the rapid recovery of cows with mastitis. The use of the new drug "Cypometronide" in combination with a low-frequency pulse flow for the treatment of acute mastitis in cows made it possible to achieve high therapeutic indicators (Griga. E.N. 2014).

A number of scientists (Batrakov. A.Ya. Videnin. V.N.) found that with intravenous administration of solutions of penicillin and streptomycin antibiotics, the therapeutic effectiveness for mastitis is 85-87% higher. With intradermal administration of antibiotic solutions, the therapeutic effectiveness decreased to 78-82%, and with intramuscular administration, 70% of cows recovered.

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Increasing the economic and therapeutic effectiveness of treatment of cows with mastitis is ensured by determining the sensitivity of isolated pathogens and choosing the method of drug administration. However, according to some scientists (Pavlenko O.B., Mironova L.P., Suleymanov S.M.), the use of antibiotics leads to the development of antibiotic-resistant strains of mastitis pathogens and a subsequent decrease in their therapeutic effectiveness, which is especially pronounced when working without taking into account the sensitivity of microorganisms to them.

The drug "Vivaton," obtained from a collection of medicinal plants, began to be widely used in the treatment of mastitis in cows. It contains more than 200 components of natural origin. The drug "Vivaton" provides high therapeutic effectiveness in the treatment of mastitis in cows. In this case, the animal with the subclinical form of mastitis is treated within 3-4 days, and in the clinical form - within 7-12 days. Cow's milk treated with Vivaton extract can be used without restrictions, since it does not contain antibiotics (Savelov, A.M., 2012).

Also, a new drug used during lactation, containing dioxidine, xanthan gum, tetramethylene diethylenetetramine lactam, methyluracil, distilled water, made it possible to treat cows with subclinical mastitis up to 85%. The effectiveness of the drug, used in the dry period and containing apramycin, xanthan gum, and distilled water, reached up to 100%. The use of the developed drugs was carried out in conjunction with a reduction in material costs for treatment (Belkin B.L., Komarov V.Yu., Popkova T.V., 2015). The researchers found that the use of the drug "Biomastim" within the framework of sanitary rules for the udder of cows significantly reduces the contamination of the skin of the udder papillae and reduces the total bacterial contamination of milk by 10 times. The drug "Profmastitis" reduces the incidence of mastitis in cows by 10%. During machine milking, treating the udder papillae with disinfectants before and after milking significantly reduces the incidence of breast diseases in cows and improves the sanitary quality of milk (Mukhacheva, L.R., 2010, Kolchina, A.F., 2012).

Conclusion:

Analysis of literature data shows that currently, among cows raised in cattle farms of our country, mastitis is present, and milk obtained from animals infected with this disease cannot be directly consumed or added to the milk of healthy animals. Untimely detection of mastitis causes significant economic damage to livestock

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farms and poses a risk to the health of people who consume milk, therefore, timely detection and prevention of this disease is important. The use of rapid tests in the diagnosis of mastitis contributes to early diagnosis, and due to the ease of use of these tests, they can be carried out on the farm itself.

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