Etiopathogenesis, Treatment and Prevention of Aseptic Inflammations of the Joints of the Limbs in Cows

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Abstract – The percentage of morbidity, etiopathogenesis, treatment and prevention of aseptic joint diseases in cows has been studied. It was found that among cows, chronic fibrinous synovitis is more common.

Keywords – Autologous Blood, Chondrolone, Periarticular Fibrositis, Synovitis, Arthritis, Low-Frequency Laser, Joint, Parenteral Administration.

I. INTRODUCTION

In recent years, in most countries of the world, among animals, the main part of non-communicable diseases is surgical pathology, in particular due to diseases of the extremities of 4.0-15.3% of cows that are exposed to premature culling. (Ulimbashev M.B., 2007)

Revealing the causes, development of early diagnosis, modern treatment, and preventive measures for aseptic and purulent-necrotic processes of the locomotor system of animals, especially the joints of the distal part of the extremities, is an urgent problem.

Among the non-infectious pathologies of cattle, a significant place is occupied by diseases of the joints of the limbs. They are widespread among dairy cows and cause great economic damage, which consists of a decrease in milk production and reproductive capacity, as well as premature culling of sick animals.

A number of scientific research works are devoted to the study of the pathology of the joints of the extremities, the issues of diagnosis, treatment and prevention (L.V. Matveev, A.M. Semivolos 1974; K.I.Shakalov 1981; S.I.Bratyukha 1989; M.S. Panko etc., 1990; V.I. Izdepsky 1990; V.I. Izdepsky etc., 1987; 1989; 1990; I.S. Panko etc., 1987). However, many questions of etiopathogenesis, therapy and treatment of diseases of the joints of the distal part of the limb are still unclear. Thus, the analysis of the literature data showed that despite the high percentage of damage to the joints of cattle in livestock farms in Uzbekistan, especially among dairy cows, there are still no scientifically grounded theories of etiology, pathogenesis, methods of diagnosis, treatment and prevention of the most common pathology. Joints - inflammation of the joints of the extremities of a non-purulent nature.

Currently, in the practice of world animal husbandry, the development of early diagnosis, treatment and preventive measures for the frequently occurring aseptic and purulent-necrotic processes of the joints of the distal part of the extremities of animals is one of the urgent tasks. Therefore, studies carried out taking into account the zonal features of our Republic to study the frequency of aseptic processes in the joints of the distal part of the extremities, analyze morphological, biochemical and immunological phenomena occurring in the body of sick animals, identify etiopathogenesis, develop and improve effective methods and tools for early diagnosis, are also relevant. treatment and prevention of diseases.
II. THE STUDY PURPOSE AND OBJECTIVES

To study the regional features of etiopathogenesis and the percentage of morbidity, treatment and prevention of aseptic diseases of the joints in cows.

III. RESEARCH PLACES, OBJECTS AND METHODS

Experimental parts of the research were carried out at “Veterinary Surgery” department, Samarkand Veterinary Medicine Institute, the city AIDS laboratory, the laboratory of the regional hospital, the laser center of the Samarkand Medical Institute, at the Siyob Shavkat Orzu livestock farm in Taylak district of the Samarkand region and Bukhara areas.

The types, etiology, distribution of chronic aseptic inflammation of the joints, their course in the form of a complex pathology of a toxic-allergic nature with some zonal features in animals in the conditions of cattle-breeding farms of the republic have been studied.

Having identified the etiology, pathogenesis and early diagnosis in chronic aseptic inflammation of the joints in cows, the economic efficiency of group prophylaxis was studied using a 2% formalin bath for 20 days, daily treatment of the wall of the hooves of animals with tar for 2-3 days, as well as the use of autologous blood, irradiated with neon - a helium laser and chondrolone, in addition, with the addition of Azkamar bentonite mixed with mixed feed to the diet.

Scientific and scientific-economic experiments were carried out to study the effect of means of group prevention of chronic fibrinous synovitis and chronic periarticular fibrositis in cows on some morphobiochemical and immunological parameters of blood and functional state of joints.

The efficacy of the treatment of chronic fibrinous synovitis and chronic periarticular fibrositis of the joints in cows was studied using a medical complex consisting of traditional methods and, in addition to them, irradiated blood and chondrolone with a neon-helium laser, used in a certain sequence and doses.

IV. RESEARCH RESULTS

When conducting dispansary examinations of animals in the interfarm feeding farm “Mekhnat Rohat” of the Ishatykan district of Samarkand region, during a clinical examination of 120 bull calves, 26 fattening bulls revealed the presence of various diseases of the joints, which is 21.7%, while 4 bull calves were diagnosed with acute fibrinous synovitis, in 16 heads - chronic fibrinous synovitis was found, in 2 heads - the initial stage of periarticular fibrositis and in 4 animals - clearly manifested periarticular synovitis.

When examining 592 heads of cattle in the Taylak district, 81 heads of animals (13.7%) revealed various articular pathologies. Sick animals, 21 heads were diagnosed with acute fibrinous synovitis, 42 heads - chronic fibrinous synovitis, and 18 animals - clearly manifested periarticular synovitis.

When conducting such examinations in the livestock farm "Kelajak" in Akdarya region, out of 114 animals, 11 heads (9.6%) were found to have various joint diseases. At the same time, acute synovitis was observed in 3 heads, chronic fibrinous synovitis in 6 heads, and in 2 animals - the initial stage of periarticular fibrositis.

In livestock farms of Pastdargom district of the Samarkand region, out of 234 animal heads, 29 heads have various articular pathologies. Although the processes of acute synovitis were not observed in sick animals, chronic fibrinous synovitis was found in 25 animals, and chronic periarticular fibrositis in 2 animals.

When conducting such surveys in livestock farms in Jondor district of Bukhara region, out of the surveyed 109 animals, 12 heads (11%) were found to have various diseases of the joints. At the same time, in 11 heads chronic fibrinous synovitis was observed, and in 1 animal - the initial stage of periarticular fibrositis.

When examining 48 heads of animals in “Nuraliibek” cattle-breeding farm in Vabkent district of Bukhara region, 6 heads were found to have various joint diseases, which is 12.5%. At the same time, 2 animals had acute fibrinous synovitis and 4 animals had chronic fibrinous synovitis.

During seasonal examinations, inflammation of the joints of the extremities was more often recorded in the winter and spring months. A clinical examination of 1217 animal heads in all farms, 165 heads (13.5%) revealed the presence of various aseptic diseases of the joints, including 30 heads of acute fibrinous synovitis, which accounted for 12.8% of the total joint pathology, chronic fibrinous synovitis was detected in 106 animal heads (64.2%), the initial stage of periarticular fibrositis, as well as sick animals with clearly manifested clinical signs in 28 animal heads (17.6%).

In fibrinous synovitis resulting from exposure to various factors, there were characteristic signs of morpho-functional changes in the joints, swelling and defiguration, moderate and mild lameness was observed, while bilateral injuries of the hock and carpal joints were characteristic. In the synovioцитogram of the fluid obtained from the joints, an increase in leukocytes and lymphocytes and a decrease in neutrophils were found. During the pathological examination of the joints, a thickening of the fibrous capsule was observed due to the formation of a thick film formed by fibrin clots on its wall, a decrease in the number of synovial papillae and their volume, accumulation of fibrin clots and sediment in the joint cavity.

The next stage of scientific and economic research was carried out in order to determine the economic efficiency when using autologous blood irradiated with a neon-helium laser beam and chondrolone for the treatment of aseptic inflammation of the joints. 15 cows with chronic synovitis and periarticular fibrositis of the joints of the distal limb were
selected according to the analog principle, they were divided into three groups of 5 cows each, while the animals of the third group for the treatment of chronic synovitis and periarticular fibrositis were used the methods generally accepted in veterinary medicine, and namely, acutely irritating ointments were applied to the joint, massage, thermal procedures, and alcohol-drying bandages were applied. For the treatment of animals of the first group with chronic synovitis and periarticular fibrositis of the joints, in addition to conventional methods of treatment, intramuscular autologous blood irradiated with a neon-helium laser beam was used at the rate of 0.5 ml/kg of live weight. For the treatment of animals of the second group with chronic synovitis and periarticular fibrositis of the joints, in addition to the conventional methods of treatment, the method of intramuscular administration of autologous blood irradiated with a neon-helium laser beam at the rate of 0.5 ml/kg of live weight and intra-articular injection of chondroline, 2 ml, was used.

In the treatment of chronic aseptic inflammation of the joints in cows, when administered to animals of the second group, in addition to the conventional methods of treatment, as a stimulating agent, intramuscular autologous blood irradiated with a laser beam at the rate of 0.5 ml/kg of live weight and inside the joint of chondroline 2 ml, positive results were obtained. There was no deviation of pathological processes in a more negative direction, the recovery time was reduced, for example, if the treatment of animals of the first group of patients with chronic fibrinous synovitis lasted 16 days, the second group - 14 days and the third group 19 days, then in animals with periarticular fibrositis, it was 19, 17 and 23 days, respectively. However, it should be noted that in animals of the third group, with the presence of periarticular fibrositis, complete restoration of joint function was observed much later than the end of treatment.

When used in addition to conventional methods of treatment, intramuscularly, autologous blood irradiated with a neon-helium laser beam at the rate of 0.5 ml/kg of live weight and chondroline for the treatment of chronic fibrinous synovitis and periarticular fibrositis of the joints, along with a reduction in the recovery time, noticeable changes in morphological biochemical and immunological parameters of blood. Accordingly, by the end of the experiment, the number of erythrocytes and leukocytes increased by 9.7 and 9.8%. By the end of the experiment, relative to the previous indicators, there was an increase in the amount of hemoglobin and lymphocytes in the leukoformula by 27 and 8.8%, respectively. The amount of total protein in the blood serum continued to increase and by the end of the experiment reached 12.3% in relation to previous indicators, a decrease in the amount of albumin and an increase in the amount of globulins, mainly beta and gamma globulins, were observed, which led to dysproteinemia, that is, relative to previous indicators, the amount of albumin decreased by 3.5%, the amount of gamma globulins increased by 18.7% and beta globulins by 16.4%.

From the immunological indicators of the blood of animals, the relative number of T-lymphocytes at the end of the experiment in relation to the previous indicators increased by 9.6%, and their absolute number by 66.6%, the relative number of B-lymphocytes by 10%, their absolute number by 37.5%. When determining the amount of A, M and G-immunoglobulins, it was found that their number at the end of the experiment in relation to the previous indicators increased by 75%, 32.8% and 10.5%, respectively.

In animals of the first group, which were used, in addition to the conventional methods of treatment, intramuscularly autologous blood, irradiated with a neon-helium laser beam at the rate of 0.5 ml/kg of live weight, the healing time of pathological processes in relation to the animals of the control group decreased and at the same time small changes were observed morphological, biochemical and immunological parameters.

The results of laboratory analysis of hematological blood parameters confirm the difference in clinical signs in animals of all three groups, an increase in the number of erythrocytes, leukocytes, hemoglobin and lymphocytes was found in animals of the first and second groups, this fact and the activity of healing of the pathological process in animals of these groups indicates stimulation of the reticuloendothelial system.

In the animals of the third group, during the experiment, a slight increase in the number of erythrocytes and hemoglobin and a decrease in leukocytes and lymphocytes were observed in the blood.

In the subsequent stages of research on a complex of widely used prevention of aseptic inflammation of the joints of cattle, based on the results of experiments aimed at the complex treatment of chronic synovitis and periarticular fibrositis in cows.

40 heads of Holstein Friesian cows were selected from the farm “Siyob Shavkat orzu” of Taylak district of Samarkand region and, according to the principle of analogues, were divided into two groups of 20 heads each. The animals of the first group were given 3-4 hours of exercise every day on walking grounds. Places of keeping animals and walking areas for exercise were under constant supervision, before and during the experiment, they were cleared of objects that could injure the animals. In addition, the hooves of animals of this group were clinically examined before and during the experiment and were trimmed every three months. In order to treat complications of open wounds of the fingers and prevent diseases of the hooves, the animals were carried out through special concrete baths with 2% formalin solution every 20 days for 2-3 days. In addition, in order to detoxify the gossypol contained in the meal and to prevent toxic-allergic synovitis, Azkamar bentonite was introduced into the diet of animals at the rate of 300 grams per head. At the same time, in order to stimulate the protective properties of the body, 0.5 ml / kg of autologous blood irradiated with a neon-helium laser beam and 4 ml of chondroline were injected.
intramuscularly. The maintenance and feeding of the animals of the second control group was carried out according to the diet of the farm.

The possession of parenterally injected autologous blood, irradiated with a neon-helium laser beam with a strong pathogenetic property, along with stimulating an increase in the body's resistance and its positive effect on the physiological state of the connective tissue, improving the regenerative processes in the intra-articular cartilage with chondrolone were reflected in our studies.

During the clinical examination of the animals of the first experimental group for 4 months, not a single case of synovitis was observed, while it should be noted that only two animal heads, as a result of injuries, developed periarticular fibrositis.

Fibrinous synovitis with distinct clinical signs was recorded in 4 animals of the control group, and in 2 animals, as a result of injury, fibrinous synovitis with weak clinical signs was observed, in 2 animals there was periarticular fibrositis of a traumatic nature. In addition, diseases such as osteodystrophy, retention of the placenta, endometritis, mastitis, various pathologies of the organs of movement and hooves, i.e., pododermatitis, were recorded in cows of this group.

The prophylactic complex applied to the animals of the first group to prevent fibrinous synovitis and periarticular fibrositis also had a positive effect on the morphological, biochemical and immunological parameters of their blood, while at the end of the experiment there was an increase in the number of erythrocytes and leukocytes by 17.6 and 8.8%, respectively.

The amount of hemoglobin and the percentage of lymphocytes in the leukoformula at the end of the experiment increased by 11.3 and 4.5%, respectively. The amount of total protein in the blood serum of horses continued to increase and at the end of the experiment reached 10.1% in relation to the previous indicators, an increase in the amount of albumin was observed on average by 6% and an increase in the amount of globulins by 10.5%.

From the immunological parameters of the blood of animals, the relative number of T-lymphocytes at the end of the experiment in relation to the previous indicators increased by 18.4%, their absolute number by 37.5%, the relative number of B-lymphocytes by 17.9%, their absolute number by 84.6%. When determining the amount of A, M and G-immunoglobulins, it was found that their number at the end of the experiment in relation to the previous indicators increased by 84.6, 50 and 24.6%, respectively.

When using a prophylactic complex to prevent chronic fibrinous synovitis and periarticular fibrositis in cattle, Azkamary bentonite had a detoxifying effect on gossypol contained in the meal, and thus prevented the development of a toxic-allergic state and synovitis. In addition, the introduction into the body of autologous blood irradiated with a neon-helium laser beam had a positive effect on the reticulo-endothelial and immune systems, and chondrolone on the physiological state of the cartilage tissue.

V. CONCLUSIONS

1. During seasonal examination of productive cattle, aseptic inflammation of the joints is most often observed in the winter and spring months, during a clinical examination of 1217 animal heads, 165 heads (13.5%) showed various aseptic diseases of the joints, namely, 30 animal heads have acute fibrinous synovitis, 106 animal heads have chronic fibrinous synovitis and 28 animal heads have periarticular fibrositis.

2. The use of an improved etiopathogenetic method for the treatment of cows with chronic non-suppurative inflammation of the joints, based on conventional methods of treatment and additional use in a certain sequence and amounts of autologous blood irradiated with a neon-helium laser beam and chondrolone, reduces the recovery time by 4-5 days, as a result of the prevention of forced slaughter the opportunity to receive from each sick cow economic efficiency on average in the amount of 354,845 sums.

3. Prevention of aseptic diseases of the joints in cows, providing animals with exercise every day for 3-4 hours on walking grounds, trimming hooves every three months, conducting them through special concrete baths with 2% formalin solution every 20 days for 2-3 days, giving the animals Azkamary bentonite at the rate of 300 grams per head in order to detoxify the gossypol contained in the meal and thereby prevent toxic-allergic synovitis, once a month intramuscular injection of 0.5 ml / kg of autologous blood irradiated with a neon-helium laser beam and 4 ml of chondrolone, had a positive effect on the reticulo-endothelial and immune systems of the body, as well as the physiological state of the cartilage tissue.

REFERENCES

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