

Etiopathogenesis and Pathomorphological Indicators of Finger Diseases in Impaired Productive Animals

B.Ya. Nuriddinov¹ and H.B. Niyazov²

¹ Senior teacher, Samarkand veterinary medicine institute.

² Doctor of science on veterinary science, Samarkand veterinary medicine institute.



Abstract – It was noted that in the specialized farms of Samarkand region, the diseases incidence in the finger region among cows ranges from 12% to 21%, 68% of the hind limbs were found to be affected, mostly in infected cows, and 56.7% of 4 toes were injured, with no significant differences in the injury degree to the 3rd and 4th toes of the forelegs.

Keywords – Hoof Ulcer (Ulcus Coronae), Interdigital Skin Ulcer (Ulcus Interdigitalae), Soft Compensation Wound (Ulcus Pulvinus Digitalis), Bed Sores (Ulcus Articulationis Phalanges Primae), Pododermatitis, Dermatitis Between The Hooves (Dermatitis Interdigitalae), Hoof And Round Joint Arthritis (Arthritis Articulationis Phalanges Tertiae Et Secundae), Mild Compensation Phlegmon (Phlegmone Pulvinus Digitalis), Purulent Inflammation (Purulenta), Injuries (Trauma), Vulnera, Necrosis.

I. INTRODUCTION

The President resolutions of the Republic of Uzbekistan PR-2841 on March 16, 2017 "On additional measures to deepen economic reforms in livestock breeding", PR-4576 on January 29, 2020 "On additional measures of state support of the livestock sector" and PD-5696 decree on March 28, 2019 "On measures to radically improve the system of public administration in the field of veterinary medicine and livestock breeding" and in carrying out the tasks set by other regulations in this area, the sector staff is tasked not only to increase the number of livestock in the country, but also to improve their breeds, increase productivity, improve the veterinary services quality.

One of the main indicators of livestock breeding efficiency is the animals' productive longevity. The life expectancy and the reasons analysis for the cow's retirement showed that animals under growing, keeping, milking and feeding intensive technologies do not have high adaptive

qualities. The main reasons for the highly productive deep-bodied and lactating cows culling, especially first-calf heifers, are still not productivity signs, but the reproductive organs, mammary gland and limbs diseases [5]; [3]. Over the past 20 years, limb diseases in highly productive cows rank third after obstetric-gynecological and mastitis [4]; [1].

The extremities diseases in animals occupy a significant place among the non-communicable diseases in the livestock farms and complexes conditions, this is indicated by both domestic and foreign researchers. According to researchers, limb diseases account for 40% of the total number of non-communicable diseases. The most common are bruises, wounds, the tendon-ligamentous apparatus sprains, hooves purulent-necrotic lesions. The distal part diseases of the extremities cause significant economic damage and adversely affect livestock breeding: the pedigree animals use terms are reduced, their productivity in general decreases [6]; [10]; [11].

In some dysfunctional farms, the fingers in animals reaches 20-30 incidence, and sometimes 50-60% and higher of the total livestock number. As a rule, highly productive animals get sick. Sick animals gain less weight, lose productivity, fatness and economic value [7]; [1].

According to [1], clinical examination of cattle 21565 head during the period from 2003 to 2013 revealed 6067 cows (8.13%) with various surgical diseases. The surgical pathologies variety, the main surgical diseases are mainly localized in the extremities distal regions (5184 cases, or 85.45%). During the clinical examination of 240 cows for the distal extremities lesions (lameness), 42 cows with varying the hooves lesion degrees were identified, which had a purulent-necrotic nature of various areas [2]. As the authors note, a characteristic feature is that 51.7-63.2% of the sick cows fall ill in the first three weeks after calving - these are the most productive cows. In 98.0-99.0% cases, the pelvic limbs were affected and only 1.5-2.1% the animals had lesions on both pelvic limbs. In some farms of the Chelyabinsk region, the number of sick cows with purulent-necrotic lesions of the fingers ranged from 8.3% to 28.4% [8].

In recent years, many high-yielding heifers from European countries have been brought to our country and distributed to farms specializing in animal breeding. It should be noted that in order to ensure the healthy care of imported pedigree livestock, to obtain high-quality and environmentally friendly dairy and meat products, animal shelters must meet zoohygienic standards, have grazing areas and access areas meet veterinary and sanitary requirements.

A large number of high-yielding heifers imported from abroad are the Holstein-Friesian breed. In almost all regions of the country, feeding complexes have been built for them without special ties. These cows have a high milk yield and increase milk production. Diseases of the distal part of the feet, i.e. the toes, have become a serious problem in many farmers and limited liability farms. Therefore, the study of the incidence, etiopathogenesis and pathomorphological indicators of this pathology is one of the urgent problems.

II. GOALS AND OBJECTIVES

The main purpose of the study was to study the incidence, etiopathogenesis and pathomorphological indicators of toe injuries among imported cows on farms.

As a result of the survey, it was noted that in the specialized farms of Samarkand region, the incidence of finger diseases among cows ranges from 12% to 21%, 68% of the hind limbs were found to be affected, mostly in infected cows, and 56.7% of the 4 toes were injured, with no significant differences in the degree of injury to the 3rd and 4th toes of the forelegs.

The study found that finger disease was on the rise in farm animals. It was noted that when sick animals were examined in farms using general and special methods of examination of foot diseases, more wound-necrotic processes were formed in

the toe area, including 17% of hoof ulcers, 18% of interdigital skin ulcers, 12% of soft heel ulcers and 4% of bed sores, pododermatitis 21%, interstitial dermatitis 19%, hoof and round joint arthritis 6 %, mild compensatory phlegmon 3%.

In order to detect pathological changes in the toe elements as a result of various purulent and non-purulent processes in the joints of the feet in cattle, the fingers and hooves of slaughtered cattle with pathological processes in the toes were opened and pathological processes were studied.

In purulent pododermatitis, the mammary layer of the base of the hoof skin is swollen, the fluid is dark turbid, uneven, and there is a small hemorrhage. As the mammary glands of the hoof skin base underwent hyperplasia and hypertrophy, some areas of the mammary layer of the hoof skin base took on a red granular velvety shape. Its dorsal and ventral sides were observed to be purple-gray with little granulation tissue growth, and the sucker-like layer of the hoof skin base was located in the form of long suckers with pus exudate adhering to the interstitial space of the granulation tissue. The hoof horn layer is darkened and necrotic processes develop as a result of purulent inflammation. Although no abnormalities were observed in the stroma of the soft tissue, the surface of which was thinly turbid, with an uneven surface, it was found that dark dead tissue was formed in them.

The volume of purulent exudate has a slightly liquid consistency, gray-yellow, and in some cases bluish-dark in color. In purulent pododermatitis, the sucker-like layer of the base of the hoof skin is swollen, and there are fragments of dead tissue in the pus, the color of which is reddish-gray when blood is mixed with it.

A phlegmonous process of pododermatitis was observed in the hooves of 2 examined animals, in which it was found that the infectious process was mainly located in the sucker layer of the base of the hoof skin. The sucker-like layer of the base of the hoof skin is swollen and there is a mixed infiltration of pus. The inflammatory tumor also spread to the fibrous layer and periarticular tissue of the hoof joint capsule. The inner surface of the joint is dry and uneven, with an average thickness of 1.9 cm of synovial membrane and joint fold. The surface of the joint ridge was uneven, with white streaks and in some places its luster was lost and 0.2-0.3 mm foci of necrosis were formed.

Investigations have shown that purulent pododermatitis is mainly caused by more mechanical trauma, as a result of trauma and as a complication of purulent processes in the surrounding tissues. In addition, the protective properties of the organism in the development of purulent inflammation are also affected by poisoning.

Deficiency of macro and micro elements in the body is one of the main factors in the development of purulent necrotic processes in the distal part of the hooves, as well as

metabolic disorders, deterioration of organ and tissue development, decreased immunobiological properties.

Based on the clinical signs of animals undergoing inflammatory processes in purulent pododermatitis, the results of pathological and anatomical examination and examination of the puncture site of the hoof, the development of purulent processes around the hoof can be expressed as follows.

Inflammatory vascular hyperemia, edema, infiltration of lymphoid and plasma tissues, and hemorrhage are observed under the influence of microorganisms on the suction layer of the base of the inflamed hoof skin.

Hoof skin base suckers are prone to hyperplasia and hypertrophy. As a result, some areas of the mammary gland at the base of the hoof skin take on a red granular or velvety shape. the sucker layer of the base of the hoof skin and the soft tissue swell.

Degenerated tissue mixed pus accumulates in the space between the hoof and the suction layer of the base of the hoof skin. In some cases, fibrin solid and pus-filled layer suckers are also present in the pus. Gradually there are also changes in the sucker layer of the base of the hoof skin, its luster begins to disappear, the surface becomes uneven and in some places necrotic foci appear. Products from the decomposition of exudate and tissue begin to be absorbed into the body and cause the development of purulent resorptive fever, an increase in body temperature by 1°C, increased heart rate and respiration, decreased appetite. Through the discharge formed in the hoof, the pus begins to flow into the external environment, after which the drainage canal expands. Pus accumulates between the sucker-like layer of the base of the hoof and hoof skin, resulting in tightening of the finger joints, accumulation of pus and expansion of the volume around the hoof joint, limiting joint movement and increasing pain and numbness.

Under the influence of purulent processes, the environment in the pathological process changes and disrupts the nutrition of the tissues of the base layer of the hoof skin, which reduces its resistance to toxins and microorganisms. As a result, the base of the hoof skin leads to fibrosis of the tissues of the base layer and melting under the influence of intermediates. The microbial layer enters the fibrous and flexed layer of the base of the hoof skin and absorbs the soft tissue by releasing toxins from itself.

Foci of necrosis appear as a result of migration of soft tissue on the surface of the tissue of the base layer of the hoof skin. As a result of the death of the tissue of the base layer of the hoof skin, they begin to migrate, and from where the tissue moved, microorganisms migrate to the surrounding tissue and bone tissue and cause severe complications, such as necrosis of the hoof bone.

Phlegmonous processes in the tissues of the base of the hoof skin are mainly due to the complication of purulent inflammation, the purulent process surrounds the base of the

hoof skin and the soft tissues located in the pit. The process takes place in certain stages, during which large and small abscesses are formed in the tissues of the base layer of the hoof skin.

At the onset of phlegmon in the tissues of the base of the hoof skin, the inflammatory tumor begins and then the cells go into the infiltration stage, where the tumor becomes very painful, hot and dense in consistency. The interstitial pressure increases as a result of swelling of the fluid and tissue accumulated between the base of the hoof and the base of the hoof skin, resulting in constriction of the surrounding nerve fibers. When the pathological process progresses to the next stage, the animal's condition worsens and the temperature rises, which indicates tissue breakdown and absorption of toxins released by microorganisms into the blood. The pus collected from the necrosis of the tissue in the pathological lesion is released into the external environment, thereby slightly improving the general condition of the animal. Growth of granulation tissue is observed only after the hoof has been cleared of soft dead tissue in the hard heel. If timely treatment measures are not applied, the pathological process develops again and turns into paraarticular phlegmon and necrotic processes.

III. CONCLUSION

1. As a result of inspections, it was noted that the incidence of diseases in the finger region among cows in farms specializing in cattle breeding in Samarkand region is from 12% to 21%, 68% of the hind limbs were found to be affected, mostly in infected cows, and 56.7% of the 4 toes were injured, with no significant differences in the degree of injury to the 3rd and 4th toes of the forelegs.
2. It was noted that when examining sick foot diseases in farms using general and special methods of examination, more wound-necrotic processes were formed in the toe area, including 17% of hoof ulcers, 18% of interdigital skin ulcers, 12% of soft heel ulcers and 4% of bed sores, pododermatitis 21%, interstitial dermatitis 19%, hoof and round joint arthritis 6%, mild compensatory phlegmon 3%.
3. In purulent pododermatitis, the mammary layer of the base of the hoof skin is swollen, the fluid is dark, turbid, uneven and fine bleeding is observed, due to hyperplasia and hypertrophy of the suckers of the hoof skin base, it was found that some parts of the hoof skin base sucker layer had a red granular velvet-like shape.

REFERENCES

- [1] M. M. Aleksin, M.P. Babina, L.L. Rudenko, P.D. Gursky, M.E. Demidova Therapeutic efficacy of the combined use of the antimicrobial drug "Cefased" and the vitamin-mineral complex "Multivet + Minerals" for purulent pododermatitis in cows and the veterinary and sanitary characteristics of milk against the background

- of their use // Scientists Notes of the UO VGAVM-2014.-t. 50. issue .2.p.1.-S.120-124.
- [2] A.Bezin, N. Butakova, VolotkoI .. Prevention and treatment of diseases of the distal extremities of cows. / Veterinary of farm animals.-2015.-1 / 2.P.40-45.
- [3] L. N. Gordienko, V.S. Vlasenko, N.A. Sviridenko Biochemical indicators of cattle with diseases of the extremities /// Bulletin of the Omsk State Agrarian University.-2013.-№4 (12) .- P.40-43.
- [4] V.I. Izdepsky, S.N. Kulinich The role of fungi in purulent-inflammatory processes of the extremities in cows // Veterinary.-2008.-№ 3.-P.27-30.
- [5] N. N. Kochnev, V.N. Dementyev, V.G. Marenkov. Increasing the productive longevity of cows in the conditions of the dairy complex /// Achievements of science and technology of the agro-industrial complex.-2012.-№ 3.-P. 48-50.
- [6] E.M. Maryin, P.M. Lyashchenko, A.V., Rukol V.M. Sapozhnikov. Clinical and pathomorphological characteristics of purulent pododermatitis in cattle /// Bulletin of the Ulyanovsk State Agricultural Academy-2015.-№4.-P.123-132., 2014.
- [7] Rukol V.M. The use of the drug "Biochelate-spray" for the treatment of cows with diseases of the fingers. // Scientific Notes of the UO VGAVM-2014.-t.50.p.1.p.1.-P.138-141
- [8] T. N. Shnyakina N.P. Shcherbakov, A.V. Shnyakin Causes and measures to combat purulent-necrotic lesions of the fingers in cattle /// Bulletin of the Bashkir State Agrarian University.-2016.-№ 1.-P. 60-63.
- [9] Cruz C.D., D. Driemeier, C. Cerva, L. Corbellini Clinical endepidemiological aspects of bovine digital lesions in southern Brazil/ //Agr. Bras. Med.Vet.Zootec.2001.Vol.53.№6.-P.654-657.
- [10]Galindo, F., Broom D.M. The relationships between social behavior of dairy cows and the occurrence of lameness in three herds. // Res. in veter. Sc. 2000. Vol. 69. N. 1. – p. 75-79.
- [11]Holirek, B., Dvorak R. Haas D. et. al. Increase in histamine concentration in ruminal fluid of cattle after experimental induction of ruminal acidosis and its effect on hoof morphology // XXII World Buatrics Congress ,Hannover, 18-23 August 2002, 521.