

Etiopathogenesis and Prophylaxis of Calves Anemia

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ANNOTATION: The article presents the etiology, nature of the course, clinical signs and some morpho-biochemical arguments of blood in case of anaemia in calves in conditions of intensively developing farms.

Keywords: hypoplastic, posthemorrhagic, alimentary, hemolytic, anemia, symptom.

Enter. Special attention is paid to rapid development of animal husbandry, to meet the growing demand of our people for high-quality livestock products. Non-communicable diseases of animals are a big obstacle to solving these problems effectively. Among these diseases, anemia in calves occupies an important place.

The analysis of literature data shows that until now the etiopathogenesis, improvement of treatment and prevention methods of calf anemia in the conditions of cattle farms of our Republic, including personal assistants and peasant farms, have not been fully studied, and effective methods of treatment and prevention of the disease have not been developed. This, in turn, increases the economic potential of farms, Taking into account the climate and local conditions of our republic, as well as the ecological environment, there is a need to widen the use of high-efficiency and inexpensive local means.

Despite the fact that anemia is common among calves of breeding age, and the morbidity rate in some farms reaches 42% and the mortality rate reaches 28%, the measures for the treatment and prevention of calf anemia in cattle farms, including private and farm farms, have not been fully studied.

Purpose of work - development of methods of diagnosis, treatment, and prevention of the spread and economic damage of anemia (anemia) in calves cared for in the conditions of livestock farms, study of its causes and mechanism of development, symptoms.

According to the literature, there are various causes of anemia, and the main factors in their development are the death of erythrocytes beyond the capacity of the bone marrow, the low production of erythrocytes due to erythropoiesis disorders, and the decrease of hemoglobin. Also, the etiological factors in calf anemia are insufficient amount of copper, iron, cobalt, vitamin V12 and folic acid in the body, increased need for iron is also the main factor. [3]

According to the literature, alimentary anemia is mainly characterized by hemopoiesis disorders. Calves get sick mainly in late autumn and winter, and lack of iron, copper and cobalt elements, vitamins and proteins in the body of a newborn animal, lack of storage conditions at the level of zoohygienic requirements are the main factors in the origin of the disease. [1]

According to information on the Internet, the excess of fiber in the diet and the change in the environment of the large stomach to the acidic side cause a decrease in the activity of microflora, as well as a decrease in the synthesis of group B vitamins by them. Hypochromic anemia, which occurs together with macrocytosis, is explained by the lack of factors that ensure blood production - cobalt, copper, vitamin B₁₂ and folic acid. [4]

The analysis of the literature data shows that until now, the prevalence of alimentary anemia among calves in the conditions of the farms of our Republic, the etiology, the importance of alimentary factors, symptoms, diagnosis, and measures for the treatment and prevention of the disease have not

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been fully studied. development and implementation of treatment and prevention measures is one of the urgent problems.

Purpose of work: The purpose of this study is to study the prevalence and economic damage, causes and mechanisms of development, symptoms, diagnosis, treatment, and prevention of anemia (anemia) in calves cared for in farm conditions.

Research materials and methods. Our scientific research on the causes of alimentary anemia in calves, its symptoms and changes in blood was carried out in 1-4-month-old calves belonging to farms.

In order to study the causes and pathogenesis of anemia in calves and to determine changes in blood, 5 heads of 1-month-old Holstein Friesian calves were separated based on the principle of "similar pairs", and clinical and hematological examinations were carried out once every 20 days until they were 4 months old. Body temperature, heart rate and breathing rate, skin and skin covering, appetite and mucous membranes condition, daily weight gain were determined by clinical examinations.

In blood samples taken from calves, the number of erythrocytes and leukocytes (Goryaev counting type), hemoglobin content (using a Sali hemometer), blood clotting speed (using a Panchenkov device), hematocrit (using a hematocrit device) were determined. A qualitative reaction (L.Jimmy et al., 1993) was conducted to determine the amount of immunoglobulins in blood serum.

In order to study the level of satisfaction of the needs of the calf body for nutrients, vitamins, as well as macro- and microelements, a zootechnical analysis was carried out on the composition and nutritional content of the calf diet.

The obtained results and its discussion. At the farm, calves are kept in individual cages from 1 to 10 days old, and from 10 days to one month in cages with 10 calves each. Zoohygienic indicators of the calf house are characterized by excess moisture, lack of light and bedding. Calves are given milk 2 times a day for up to 10 days using special milkers, starting from 10 days old and up to 4 months old, and normally calves should be given milk at least 4 times a day. Calves of breeding age older than 4 months are stopped being fed milk and fed with silage, roughage and mixed fodder.

Weaned calves are hand-fed twice a day. Watering is done with the help of watering cans.

Maize silage is 44.4% of the ration, alfalfa hay is 22.2%, wheat straw is 22.2% and mixed feed is 11.1%. Compared to the standards of nutrition, the nutritional content of the diet is 1.4 units less, digestible protein is 121 g, sugar - 179.5 g, carotene - 88.2 g, phosphorus - 12.6 g, and fiber is 267.4 grams, calcium - 1.3 excess per gram was determined. The satisfaction of the needs of the calf organism is 65.0% for nutrients, 71.2% for digestible protein, 48.6% for sugar, 53.5% for carotene, 68.5% for phosphorus, 103.7% for calcium, and 103.7% for fiber. - was 78.2 percent.

The ratio of sugar to protein in the diet was 0.53 instead of 0.8-1.5:1, and the ratio of phosphorus to calcium was 0.75 instead of 2.0:1.

In calves of growing age, clinical signs are severe stunting (in 60% of calves), paleness of mucous membranes (in 68% of calves), decreased and altered appetite (lizukha), insensitivity to external influences, roughness and decreased gloss of the skin in almost all calves, around the eyes. The discoloration of the skin ("glassy glasses") was characterized by symptoms pathognomonic for anemia, such as a decrease in skin elasticity, an increase in the number of heart beats per minute by an average of 18.2 beats per minute and by 5.6 beats per minute as a compensatory process in most calves.

Some morphobiochemical parameters of blood in the calves of the experimental group compared to the parameters at the beginning of the experiments, by the end of the tests, the amount of hemoglobin was 75.6 ± 1.15 g/l, erythrocytes - 4.43 ± 1.3 million/ μ l, glucose - 1.55 ± 0.06 mmol/l, total protein - 63.2 ± 1.72 g/l, erythrocyte sedimentation rate - 03 mm per hour, immunoglobulins decreased to 500 ml/l.

These indicators indicate that calf anemia is accompanied by a decrease in the amount of hemoglobin and erythrocytes (normochromic anemia), the rate of erythrocyte sedimentation and a decrease in immunity.



When calves are weaned at 3 months of age, the deterioration of some morphobiochemical parameters of blood can be explained by the lack of improvement of the rations, the lack of satisfaction of their body's needs for nutrients, vitamins and minerals, and the occurrence of alimentary anemia in calves.

In order to improve methods of preventing alimentary anemia in weaned calves of growing age, 2 groups of 8 calves each were formed, and the ration of calves in the first experimental group was supplemented with a mineral solution consisting of iron sulfate, copper sulfate, and cobalt chloride, 50 ml per day per head. mixed for 30 days, Intrafer-100-B12 6 ml was injected intramuscularly once every 10 days, a total of 3 times.

Calves in the second control group were kept on the ration introduced in the farm.

Whiteness of mucous membranes, decrease in appetite and response to external influences, roughness of the skin, decrease in gloss, decrease in skin elasticity, depigmentation of the skin around the eyes, delay in shedding, growth and development in calves with alimentary anemia in the experimental and control groups before the start of preventive treatment measures signs such as The average body temperature was 38.5-38.70C, the number of heartbeats per minute was 136-144, and the number of respiratory movements was 46-51.

In the calves of the first experimental group, on the 30th day of treatment, the clinical signs characteristic of the disease almost disappeared and the calves recovered completely, and in the calves of the control group, clinical signs characteristic of anemia were also observed on the 20-30 days of treatment.

Although there were no significant differences in the morphobiochemical parameters of the blood of the calves in the experimental and control groups before the start of the experiments, sharp differences were observed in these parameters in the last days of the treatment.

The number of erythrocytes in the blood at the beginning of the treatment in the calves of the first experimental group was on average 5.77 ± 1.09 , and in the control group - 5.89 ± 1.76 million/ μ l. was 7.72 ± 2.12 mln/ μ l by the end of the treatment in the 1st group. up to 4.95 ± 0.48 million/ μ l in the 2nd group. decrease to

The concentration of hemoglobin in the blood of calves in the first experimental group was 88.9 ± 2.81 g/l on the first day of treatment, and 103.8 ± 2.31 g/l by the end of treatment. formed In the calves of the control group, the concentration of hemoglobin in the blood was 82.7 ± 2.39 g/l. decrease was noted, that is, the anemia process increased in calves in the control group.

The daily increase in body weight compared to the indicators at the beginning of the experiments by the end of the experiments was 1.6 kg in the control group and 2.5 kg in the experimental group, that is, it was 56.2% more than the control group.

Conclusions

1. The main causes of anemia in growing calves are alimentary in nature, the lack of improvement in rations, the content of nutritious substances, vitamins and minerals, the sugar-protein and phosphorus-calcium ratio are below the norm, the excess of fiber-rich foods, the lack of exposure and sunlight for calves. factors such as

2. Pathognomonic signs such as severe anemia of calves, stunted growth, paleness of mucous membranes, decreased appetite and changes, skin glossiness and decreased skin elasticity, increased heart rate and breathing, the number of erythrocytes in the blood, hemoglobin, glucose, total protein, erythrocytes It was characterized by a decrease in the sedimentation rate and hematocrit index, as well as a decrease in the amount of immunoglobulins.

3. In order to prevent alimentary anemia in calves, along with feeding them in balanced rations consisting of high-nutritive, easily digestible foods, additional composition to the ration after weaning them: 10 g of iron sulfate, 5 g of copper sulfate, 0.5 g of cobalt chloride, mineral water up to 1 liter 50 ml of the solution per head per day mixed with mixed feed for 30 days improves the clinical-physiological and morphobiochemical indicators of blood in calves and prevents alimentary anemia.



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