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EFFICIENCY OF METHODS OF STRUGGLE AGAINST GASTROINTESTINAL INTESTINAL DISEASES OF CALVES IN "BAYSERKE-AGRO" LLP

Abstract. The article presents the results of diagnostic studies of pathological and biological material from calves. The diagnosis was established on the basis of epizootological data, clinical signs, pathological changes, and results of bacteriological and serological studies.

As a result of studies of biological material from newborns of clinically sick calves, the causative agent of colibacillosis Escherichia coli was identified and identified. When staging a bioassay on white mice, the animals fell on the second day, which indicates the virulence of the isolated cultures of Escherichia, during typing of which they were assigned to the O78 serogroup. Based on the results of diagnostic studies on the farm, health measures were taken. Sick calves were subjected to therapeutic effects of bactericidal antibiotics, as well as symptomatic treatment of animals. After the complex of antiepizootic, economic, veterinary, sanitary and preventive measures in "Bayserke-Agro" LLP, there were no cases of colibacillosis among newborn calves. The farm improved from colibacillosis, which had a positive effect on the number of output livestock.

Introduction. Infectious diseases of young farm animals cause enormous economic damage to the republic's animal husbandry and represent an important veterinary and biomedical problem. The fight against infectious animal diseases is a national problem. Colibacteriosis - an acute infectious disease of young animals in the first days of life, manifested by profuse diarrhea, signs of severe intoxication and dehydration. Calves get sick mainly in the first 1-7 days of life, as well as in the pre- and post-detachment periods. Characterized by the massive incidence of emerging young. The disease occurs in all seasons of the year, but more often in the period of mass calving, farrowing, lambing. The source of the pathogen are sick and ill animals, as well as mothers - carriers of pathogenic Escherichia. Infection occurs in utero or during childbirth with non-compliance with hygiene; when feeding colostrum and water, feeding feed contaminated with the causative agent of colibacillosis [1-3].

The leading role in the development of diarrhea of newborn piglets, calves, lambs belongs to enterotoxigenic strains of Escherichia with adhesive antigens K88, K99, 987P, F41, F18, A20, Att25 of various O-serogroups.

The causative agent of E. coli is a short thick bacillus with rounded ends, mobile (there are flagella), gram-negative, does not form a spore, an aerobic or facultative anaerobic, grows well on ordinary nutrient media, in smears it is located single. To establish the genus and species of Escherichia, the identification of biochemical properties and cultivation on special media, Endo, Levin, Kligler, is of great importance.

Colibacteriosis is one of the most common diseases of young stock of all types of farm animals. Calves suffer mainly in the first 1-7 days of life; piglets - in the first days and weeks of life, as well as

during the pre-withdrawal and post-detachment periods; lambs, from the first days of life and up to 5-7 months of age; foals from the first days; fur-bearing animals in 1-5 days and less often in 6-10 days of age. The disease occurs in all periods of the year. Calves and lambs are more likely to get sick in the stall period. The source of the infection pathogen is sick and colibacillosis-infected animals, as well as mothers who carry pathogenic types of Escherichia. Animals release the pathogen into the environment with feces, and sometimes with urine. Among young calves during the period of mass calving, lambing, and farrowing, the pathogen is transported on susceptible livestock, as a result of which its virulence increases significantly, which leads to a new outbreak of the disease.

The incubation period of colibacillosis lasts from several hours to 1-5 days. In calves, there are three forms of the disease: septic, enterotoxemic and intestinal (enteric) [4].

Research results. In 2015, cases of death of newborn calves of a daily or two-day age were observed on the farm. Calves were born non-viable and died in the first hours after birth. On January 12, 2015, pathological material from a 7-day-old calf (inventory no. W/n) and an 8-day bull (inventory no. 577759906) were delivered from a private farm in the Talgar district of the Almaty region for research. In sick calves, diarrhea, dehydration, intoxication, fever, and general depression were noted. In calves, a septic form of colibacillosis prevailed, characterized by an acute course, severe diarrhea, septicemia and a rapid onset of death. In some calves, an enterotoxemic form of colibacillosis was observed with a characteristic penetration of pathogenic strains of Escherichia coli into the anterior sections of the small intestine and the development of diarrhea. Bacteremia was usually absent, calves died due to toxemia and collapse. The intestinal form manifested as diarrhea with a milder course of the disease in the absence of signs of toxicosis. Mortality was less common than in the first two forms. In calves, hyperacute, acute and subacute course of colibacillosis was noted. Hypertensive course of colibacillosis was manifested mainly in calves of the first 3-5 days of life. The body temperature increased briefly to 40-41 °C, the wool became disheveled, conjunctivitis developed, and depression developed. . An acute form of colibacillosis was observed in calves in the first days of life. Figure 1 shows a calf suffering from an acute form of colibacillosis.

Figure 1 – Calf, patient with an acute form of colibacillosis

Figure 1 shows the characteristic posture of a calf suffering from an acute form of colibacillosis. The neck is extended, thrown back, the head rests against the body. One can see the depressed serious condition of the animal.

There was pain when pressing on the abdominal wall, depression, rapid breathing, loss of appetite. Calves' eyes subsided, diarrhea and severe dehydration were expressed. On the first or second day of the disease, the consistency and color of feces changed. First, the faeces are liquefied, then they become gray-white, often frothy, streaked with blood, mucous, then watery. Breathing difficult, superficial, and later rapid. Pulse frequent and weak. Exhausted animals died in a deep coma. The illness lasts 2-3 days.

The subacute course in calves aged 5-10 days was accompanied by the development of secondary microflora of the upper respiratory tract.

In the autopsy study of corpses of calves who died from colibacillosis, pronounced changes in the rectum (punctate or banded hemorrhages) are pronounced. Mass hemorrhages were noted in the small intestine. Lymph nodes swollen and juicy on the cut, sometimes in hemorrhages. Spleen enlarged. In the liver, kidneys, heart, as well as in the muscles, degenerative processes are expressed. The gel bubble is filled and stretched. Hemorrhages were noted under the epicardium and on the endocardium, as well as on other serous integuments. Pulmonary edema, catarrhal inflammation of the lungs was observed.

Diagnosis of colibacillosis. The diagnosis of colibacillosis was established on the basis of the epidemiological, clinical, pathoanatomical data and the results of bacteriological examination of the material.

For bacteriological research, the material from calves (heart pieces, spleen, liver with gall bladder, kidneys, mesenteric lymph nodes, small intestine bandaged from two ends) was transferred from the farm to the bacteriology laboratory of KazSRVI LLP.

For in vivo bacteriological diagnosis, fresh feces from a sick calf not treated with antibiotics were examined. Bacteriological examination includes the isolation and identification of colibacillosis, determination in the agglutination reaction (RA) with colibacillosis diagnostic sera and the production of a bioassay on white mice.

Fresh pieces of the lung, liver, spleen, kidney, mesenteric lymph nodes were delivered. From patmateriala calves (from the liver, spleen, mesenteric lymph nodes, heart, kidney, lung) crops were made on the BCH, MPA, Endo differential diagnostic medium. After 20 hours, the growth of large round colonies was observed on nutrient media. On dense media, weakly convex, translucent colonies with smooth edges and a shiny S-shaped surface were formed. A uniform turbidity and a slight precipitate were observed on the BCH. On the Petri dishes with the Endo medium, brilliant smooth colonies, painted in a bright crimson color with a metallic sheen, grew.

Figures 2 and 3 show the growth of Escherichia on MPA and Endo medium.

Figure 2 – The growth of Escherichia in MPA

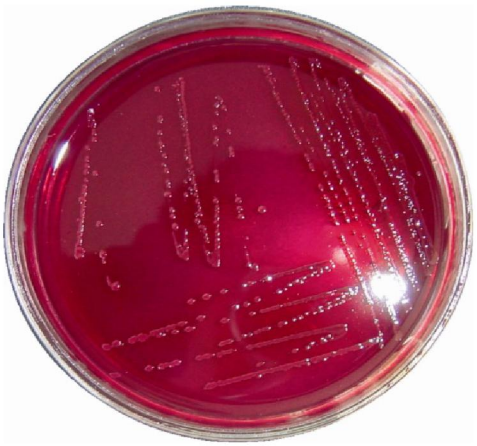

Figure 3 – The growth of Escherichia in the Endo environment

In figures 2 and 3, there are visible large round colonies on the MPA and on the Endo medium.

In figure 4, Escherichia is represented in a smear prepared from a daily agar culture isolated from the calf.

The figure shows gram-negative large sticks with rounded ends, located singly.

Escherichia cultures isolated from patmaterial from both calves possessed high enzymatic activity. Escherichia decomposed with the formation of acid and gas: arabinose, galactose, lactose (differential distinction of Escherichia from Salmonella), maltose, mannitol, rhamnose, sucrose. The cultures isolated from calves did not liquefy gelatin, formed indole, did not form hydrogen sulfide (a distinctive feature of Escherichia from Salmonella), reduced nitrates to nitrites, and gave a negative Voges-Proskauer reaction. The mobility of both isolated cultures was noted.

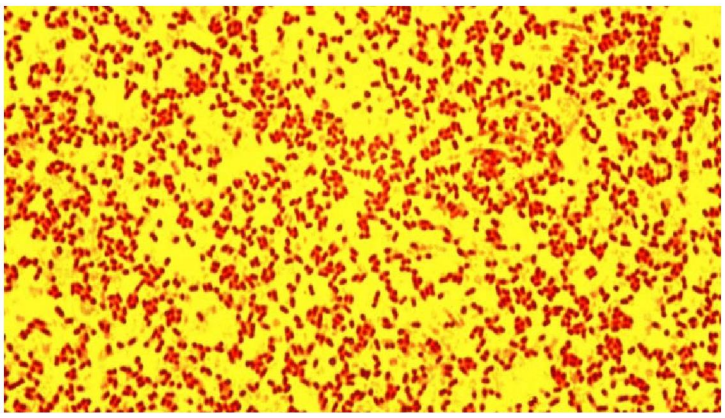

Figure 4 – Culture of Escherichia in a gram-stained smear

The tested cultures agglutinated with diagnostic sera of colibacous OK polyvalent and monovalent dry production of AOOT Biomed them. Mechnikov. The sera contained specific agglutinins to the surface K- and somatic O-antigens. Serum diagnostic escherichiosis OK are preparations obtained from native serum of rabbits hyperimmunized with a mixture of corpuscular antigens of Escherichia. The active principle of the sera is specific K- and O- agglutinins against the antigens of Escherichia pathogenic groups. In the formulation of RA with monovalent serum, both E. coli cultures obtained from calves are assigned to O78 serogroup. Coarse agglutinate is well pronounced, full clarification of the drop was noted with negative control, the reaction was evaluated on four crosses.

The cultures were identified in accordance with the Burge determinant [7].

Based on cultural, morphological, tinctorial, biochemical, and serological properties, both cultures were identified as Escherichia coli.

The virulence of epizootic cultures of E. coli was tested in an experiment on 6 white mice weighing 16–18 g (for each culture, 3 heads). Experimental animals weighing 16-18 g were injected subcutaneously with 0.5 ml daily broth culture of Escherichia. On the third or fourth day, the death of all experienced white mice was observed. An infected culture of Escherichia, not contaminated by extraneous microflora, was sown from the liver and heart of dead mice.

Control measures. Before treating the sick calves the sensitivity of the Escherichia to antibiotics was determined. Started treatment immediately at the first signs of the disease. Bacteriophage, hyperimmune anti-esterichiotic serum, gamma globulin were used. Antibiotics were prescribed in accordance with the results of determining the sensitivity of E. coli, the most effective are (enroxil, flumequin, kanamycin, cobactan, gentamicin, etc.), sulfanilamide (sulfazole, sulfadimethoxin, etc.) and nitrofuran (furazolidone, furazidin, etc.) were used simultaneously.) drugs. Symptomatic agents were used intravenously to restore the water-salt metabolism, acid-base balance, neutralize toxins. Symptomatic treatment was carried out in the form of intravenous injections.

Specific prevention is based on carrying out a complex of organizational, economic, antiepizootic, zootechnical, veterinary and sanitary and zoohygienic measures aimed at increasing the resistance of the mothers and young animals, ensuring the hygiene of childbirth, as well as preventing infection of animals through environmental objects. Timely vaccination of pregnant cows and pregnant sows, passive immunization of newborn young animals with specific immune serum and gamma globulins. In the first hours of life, non-specific globulins, ABA, PABA, acidophilus are used as prophylactic agents.

Young animals who have had colibacillosis become immune to subsequent infection. Artificial immunity in newborns is poorly formed, vaccination does not provide the formation of active protection against colibacillosis that occurs in the first days of the animal's life. Therefore, it is necessary to immunize pregnant animals, which provides a high concentration of immune bodies in colostrum. For specific prophylaxis of colibacillosis in the farm, a vaccine against colibacteriosis (escherichiosis) of animals is used. Vaccines associated inactivated against colibacillosis, salmonellosis, klebsiellosis and proteic infection of young farm animals and fur animals (OKZ vaccine), produced by OO Agrovet, Moscow.

After the complex of antiepizootic and economic activities in “Bayserke-Agro” LLP, there were no cases of colibacillosis among calves. The economy improved from colibacillosis.

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«БАЙСЕРКЕ-АГРО» ЖШС БҰЗАУЛАРДЫҢ АСҚАЗАН-ІШЕК АУРУЛАРЫМЕН КҮРЕСУ ӘДІСТЕРІНІҢ ТИІМДІЛІГІ

Аннотация. Мақалада бұзаулардан алынған патологиялық және биологиялық материалдыңбалаулық зерттеу нәтижелері келтіріледі. Балауіндеттанулықлық деректер, клиникалық белгілер, патологоанатомиялық өзгерістер, бактериологиялық және серологиялық зерттеулердің нәтижелері негізінде анықталған. Жаңа туған бұзаулардан биологиялық материалға жүргізілген зерттеулер нәтижесінде клиникалық ауру бұзаулардан Escherichia coli колибактериоз қоздыруышсы бөлініпалынды. Биопробаны ақ тышқандарда қою кезінде жануарлар екінші тәулікте өлім-жітімге ұшырады, бұл эшерихийдің бөлінген өсінділерінің вируленттілігін растайды, олардыңтипін ажырату кезінде 078 серотобына жатқызылатындығы анықталды. Балаулық зерттеулер нәтижелері негізінде шаруашылықта сауықтыру шаралары өткізілді. Ауру бұзауларда бактерицидті антибиотиктердің терапевтік әсері байқалды, сондай-ақ жануарларға симптоматикалық емдеу жүргізілді. «Байсерке-Агро» ЖШСіндетке қарсы, шаруашылық, ветеринариялық-санитариялық және алдын алу іс-шаралар кешені жүргізілгеннен кейін жаңа туған бұзаулар арасында колибактериоз ауруы байқалмады. Шаруашылық колибактериоздан сауықтырылды, бұл мал басының санының артуына оң әсер етті.

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ЭФФЕКТИВНОСТЬ МЕТОДОВ БОРЬБЫ С ЖЕЛУДОЧНО-КИШЕЧНЫМИ БОЛЕЗНЯМИ ТЕЛЯТ В ТОО «БАЙСЕРКЕ-АГРО»

Аннотация. В статье приводятся результаты диагностических исследований патологического и биологического материала от телят. Диагноз установлен на основании эпизоотологических данных, клинических признаков, патологоанатомических изменений, результатов бактериологического и серологического исследований.

В результате проведенных исследований биологического материала от новорожденных клинически больных телят выделен и идентифицирован возбудитель колибактериоза Escherichiacoli. При постановке биопробы на белых мышах животные пали на вторые сутки, что свидетельствует о вирулентности выделенных культур эшерихий, при типировании которых они были отнесены к серогруппе О78. На основании результатов диагностических исследований в хозяйстве проведены оздоровительные мероприятия. Больных телят подвергли терапевтическому воздействию бактерицидными антибиотиками, а также проведено симптоматическое лечение животных. После проведения комплекса противоэпизоотических, хозяйственных, ветеринарно-санитарных и профилактических мероприятий в ТОО «Байсерке-Агро» случаев колибактериоза среди новорожденных телят не отмечалось. Хозяйство оздоровлено от колибактериоза, что оказало положительное влияние на количество выходного поголовья.

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EPISOOTOLOGICAL MONITORING OF CATTLE MORAXELLOSIS

Abstract. Infectious keratoconjunctivitis (IKC) of moraxella etiology, according to the literature, is registered in many countries of the world, including in the Republic of Kazakhstan. Monitoring of infectious keratoconjunctivitis of moraxella etiology in the Republic of Kazakhstan shows that the disease was detected in 9 areas and 11,738 head of cattle of the breed Aberdeen-Angus were infected, the incidence averaged 39.98%.

In the economic entities of the Republic of Kazakhstan, where cattle were imported from far abroad, in all cases the presence of the disease, as well as all links of the epizootic process, i.e. the source of the pathogen, the transmission mechanism of the infectious agent (transmission factors - non-living objects and vectors - insects), as well as susceptible animals.

One of the main reasons for the appearance of the disease is the import of imported breeding stock, among which there were sick animals, and the movement of infected livestock without appropriate anti-epizootic measures led to a wide spread of the disease and an increase in the number of unfavorable items.

Infectious keratoconjunctivitis in cattle of moraxella etiology is clinically characterized by a lesion of the eye from inflammation until complete loss of vision and is manifested by staging.

Moraxellosis of cattle is manifested mainly in the spring-summer period of the year, more often in the warm season, in the period of mass activity of insects.

Animals of all ages get sick, but more often animals up to 2 years of age, regardless of gender, and hot and sunny weather, high dustiness of indoor and pasture air, as well as insects contributed to its wide and rapid spread and clinical manifestation in the herd.

On the basis of the conducted studies, it can be concluded that in the fight against moraxellosis of cattle it is necessary to conduct a full range of these antiepizootic measures that require dynamic improvement depending on the biological properties of the pathogen, antibacterial resistance, clinical manifestations of the disease, as well as feeding conditions and content.

Key words: infectious keratoconjunctivitis, moraxellosis, epizootological monitoring, cattle.

Research objective. To conduct epizootological monitoring of cattle moraxellosis in the context of epizootological units of economic entities of the Republic of Kazakhstan.

Material and methods. The studies were carried out within the framework of the program "Ensuring veterinary and sanitary safety and epizootic well-being on cattle moraxellosis". Epizootological, clinical, pathologic-anatomical and bacteriological methods for diagnosing animal moraxellosis were used in the performance of research work.

Relevance. One of the most common diseases that manifest themselves in damage to the organs of sight in cattle is infectious keratoconjunctivitis (ICH), caused by bacteria of the Moraxella genus, which is registered in many countries around the world, including the Republic of Kazakhstan.

Thus, in the United States of America, the ICC of cattle of moraxella etiology annually affects about 10 million animals, causing economic damage of more than $ 150 million (Hansen, 2001).

In some of the far abroad countries, the ICC of the large horn cattle reaches 45.4%, and the economic damage caused by the disease is reduced by the live weight of the animal, and the milk production is reduced, the milk is reduced, the decrease in production is reduced by 45.4%.

Results and analysis of the data. Monitoring of cattle disease with infectious keratoconjunctivitis in the Republic of Kazakhstan shows that one of the main causes of the disease is the import of imported breeding livestock, among which sick animals took place, and the movement of infected animals throughout the regions of the Republic of Kazakhstan without corresponding antiepizootic measures led to widespread disease and an increase in the number of dysfunctional business entities [2].

According to the data of the Meat Union of Kazakhstan sent to us, mores among the cattle are noted mainly among the imported stock of Aberdin-Angus breed (table, figure 1).

Table 1 – Information on the distribution of moraxellakeratoconjunctivitis among the Aberdeen-Angus breed imported to the Republic of Kazakhstan

Name of regions	The number of imported livestock animals for 2012-2018 / the presence of patients		
	Aberdeeno-Angus		
	Delivered	Got sick	
		absolute amount	percent
Akmola	7355	2942	40,00
Aktobe	2382	952	39,96
Almaty	4811	1924	39,99
Atyrau	–	–	–
East Kazakhstan	1103	441	39,98
Zhambyl	503	201	39,96
West Kazakhstan	–	–	–
Karaganda	–	–	–
Kostanay	6646	2658	39,99
Kyzylorda	–	–	–
Mangystau	–	–	–
Pavlodar	2347	938	39,96
North Kazakhstan	3572	1428	39,97
South Kazakhstan	637	254	39,87
Total	**29 356**	**11 738**	**39,98**

As shown in table and figure 1, the disease was detected in 9 regions of the Republic of Kazakhstan, where 11,738 heads of cattle were infected, with an average incidence rate of 39.98%.

Epizootological monitoring in respect of moraxellosis of cattle, carried out by us in the economic entities of the Republic of Kazakhstan, this year allowed us to identify the characteristics of the occurrence, development and manifestation of the disease, as well as to establish the extent of its spread.

The first cases of the disease among cattle were registered by us during an epizootological survey of the beef herd of productivity in Bayserke-Agro LLP.

During epizootological examination of separately contained groups of animals in Bayserke-Agro LLP (Kumtobe mountain distant site), we found that eye disease in cattle was observed mainly in animals of the Aberdeen-Angus breed. In a clinical examination of 274 heads of cattle, we noted in 16 animals the characteristic features of moraxellosis.

The animal disease manifested initially in the form of swelling of the conjunctiva and tearing and covered 5.8% of the population. At the initial stage, a serous outflow from the medial angle of the eye appeared, and later a congestion of mucous and purulent exudates was observed. Palpation revealed eyelid tenderness, increased local temperature. Later, a more or less pronounced corneal clouding appeared and on the 6–10th day erosion about 1 mm in diameter developed at its center, which soon turned into an ulcer. The stage of ulceration was accompanied by strong anxiety of animals, relatively high body

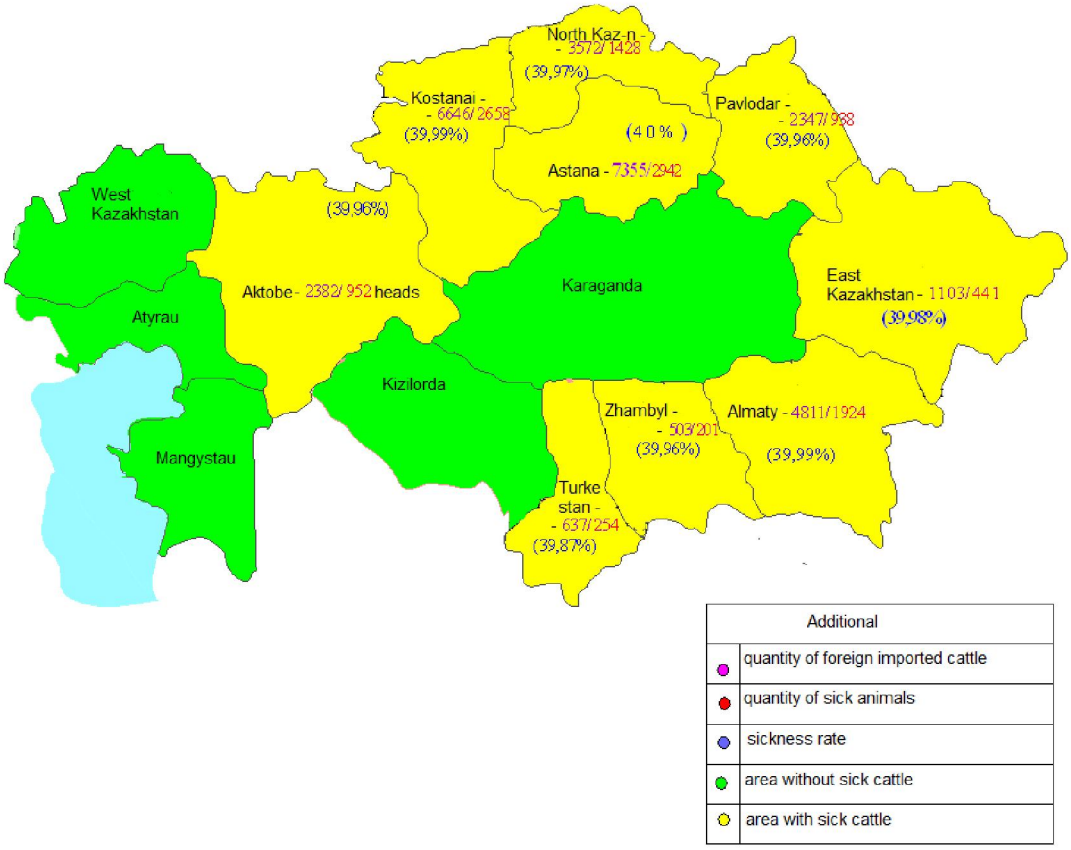

Figure 1 – Mapping (zoning) of the territory of the Republic of Kazakhstan into zones according to the extent of the spread of morax cough infection among cattle for 2012-2018

temperature, reaching up to 41 ° C and refusal of food. Corneal opacification quickly spread in all directions from the ulcer. Over the next 10-15 days, the development of the vascular network appeared at the edge of the lesion, and in some particularly severe cases, it surrounded the entire cornea along the periphery, forming a red rim. These changes led to a thickening of the cornea and a loss of its transparency. Cases have been observed where the vessels germinated toward the center of the cornea and formed an elevation in the shape of a nipple. Subsequently, the blood supply was stopped, and the bright color of the vascular plexus assumed a pale hue. Within 25–50 days, vascular induction decreased in size and completely disappeared. Among animals and especially young animals of 6-10 months of age, the deformation of the eyeball was observed. In 2% of 6-8-month-old calves, all layers of the cornea perforated as a result of its ulceration and the vitreous flowed out. As a result, one- or two-sided blindness occurred. Defeat was usually observed in one eye, and if in both - then at a different stage of the course.

These features of the development of animal diseases. In “Baiserke-Agro” LLP we were also noted when examining the livestock of cattle (mainly aberdine-angus breed) and in other regions of the Republic of Kazakhstan, which was confirmed by clinical manifestations of the disease.

In the dynamics of the development of the disease, we can conditionally note five stages that go smoothly into one another:

- catarrhal conjunctivitis with photophobia, serous lacrimation, hyperemia of the peripheral tissues of the eyeball and blepharospasm is possible, figures 2, 3;
- parenchymal keratitis, corneal edema, figures 4, 5;
- beginning purulent keratitis, keratocele, corneal ulcer, corneal opacity, figure 6;
- purulent keratoconjunctivitis, corneal perforation, figure 7;
- purulent panophthalmia, blindness, figure 8.

These stages of the disease were detected by us during the examination of the livestock of cattle in all regions of the country.

Figure 2 – Serous tearing,
hyperemia of peripheral tissues of the eyeball

Figure 3 – Catarrhal Conjunctivitis
with photophobia

Figure 4 – Parenchymal keratitis

Figure 5 – Corneal Edema

Figure 6 – Starting purulent keratitis

Figure 7 – Corneal Perforation

Figure 8 – Purulent anoftalmia, blindness

Figures 2–8 show photographs of the clinical manifestations of all keratoconjunctivitis stages we have found in cattle.

In the center of the cornea appears a center of dark gray opacities, which turns into a lighter, gray-blue spot. From the edge of the cornea, capillaries grow into the zone of diffuse opacification, thereby creating a narrow pink hyperemic strip (ring) around the zone of turbidity. In some animals, swelling of the clouded part of the cornea and the development of ulcers leading to blindness are observed. With delayed treatment, recovery is delayed for a long time (weeks, months) or is not achieved at all.

Sick animals are anxious and kept in the shadows, their appetite and productivity decrease, and animals that have completely lost their eyesight can eat only after they feed them directly in a container.

Trying to find out the alleged source of the pathogen and possible ways of bringing the disease, we found that the emergence of animal diseases is associated with the importation from the foreign countries (Canada, Australia) of pedigree cattle of the Aberdeen-Angus breed. In the future, the epizootic process intensified in the summer period of time, which may be due to the presence of pathogen carriers, which can be stinging insects, and as a result of increased pathogenicity as a result of the passage of the pathogen when it is transmitted from an infected animal to a healthy one.

Observations have established that the causative agent of the disease can be transferred by means of transmission factors (not living objects), and also insects can be probable carriers. Auxiliary factors affecting the course and clinical manifestation of the disease are also eye injuries, hot weather, wind and dust. And moving an infected livestock carrier of a pathogen from one farm to another is a direct path to a significant spread of the disease. Consequently, the continuity of the epizootic process was ensured, which caused the emergence of new outbreaks of the disease.

There are observations of the employees of the Kazakh SRVI on the availability of the disease among some other breeds, in particular, Hereford and Kazakh white-headed. Obviously, there is a potential possibility of further expansion of the specified disease among other breeds of CRC contained in the territory of the Republic of Kazakhstan.

In the Republic of Kazakhstan, despite the wide spread of infectious keratoconjunctivitis of moraxella etiology, the issues of microbiology and immunology of the disease have not been studied. The reason for this is that moraxellosis of cattle in our country is a new, poorly studied disease, and its early diagnosis in our country has not yet been developed. Therefore, in the absence of proper antiepizootic measures, there is a potential danger of further spreading it to other species of animals that are kept together.

Based on the above, it is very important to develop methods for the isolation, conditions for the cultivation of bacteria of various species, including Moraxella bovis and Moraxella bovoculi. Requires the study of the biological properties of pathogens circulating among animals in the territory of the Republic of Kazakhstan. It is very important to determine the role of different types of moraxell in the etiology of the disease and on this basis the development of diagnostic methods, specific prevention, and the implementation of antiepizootic measures.

On the basis of the conducted research, it can be concluded that in the fight against moraxellosis in cattle it is necessary to carry out the full range of these antiepizootic measures [3,4], which require dynamic improvement depending on the biological properties of the pathogen, antibacterial resistance, clinical manifestations of the disease, and feeding conditions and content.

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ІРІ ҚАРА МАЛМОРАКСЕЛЛЁЗЫНЫҢ ІНДЕТТАНУЛЫҚ МОНИТОРИНГІ

Аннотация. Ірі қара малморакселлёзіне жүргізілген індеттанулық мониторинг аурудың этиологиясын, ауру қоздырушысының бастауын, ауру тетігінің берілу факторын анықтауға, індетке қарсы шараларды жетілдіру үшін алынған деректерді талдауға мүмкіндік берді.

Түйін сөздер: инфекциялық кератоконъюнктивит, моракселлёз, індеттанулық мониторинг, Ірі қара мал.

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ЭПИЗООТОЛОГИЧЕСКИЙ МОНИТОРИНГ МОРАКСЕЛЛЁЗА КРУПНОГО РОГАТОГО СКОТА

Аннотация. Проведен эпизоотологический мониторинг моракселлёза крупного рогатого скота, который позволил выявлять этиологию заболевания, определить источник возбудителя болезни, установить факторы передачи заразного начала, провести анализ полученным данным с целью разработки противоэпизоотических мероприятий.

Ключевые слова: инфекционный кератоконъюнктивит, моракселлёз, эпизоотологический мониторинг, крупный рогатый скот.

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