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Changes in Blood Clotting Time in Sheep Parasitic Diseases (Marshallagiosis, Nematodirosis and Habertiosis)

Vakhidova A. M.
Doctor of Biological Sciences, Associate Professor of the Department of Microbiology, Virology, Parasitology and Immunology, Samarkand Medical University, Uzbekistan

Khudzhanova M. A.
Senior lecturer of the Department of Normal Physiology, Samarkand Medical University, Uzbekistan

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ABSTRACT

To date, cattle breeding are considered one of the main directions of animal husbandry. However, one of the main obstacles to the development of this direction, increasing the number of cattle, is the spread of infectious, non-infectious and invasive diseases among them. In particular, causing marshallagiosis, nematodirosis and habertiosis, and from Echiinococcus larva emerging echinococcosis, which are currently of important epizootological and epidemiological importance, cause significant economic damage to livestock farms, as a result of a decrease in the quantity and quality of meat products and the quality of wool in animals affected by these diseases. "Every sheep affected by marshallagiosis, nematodyrosis, habertiosis and echinococcosis has a 20-30% decrease in body weight, physiological changes (blood clotting disorders, lack of micro and macroelements), miscarriages, decreased resistance to other diseases and developmental delay. The study of these parameters will allow sheep breeders and livestock breeders to prejudice the infection of lambs with parasitic diseases and preserve the health of animals.

Introduction. Sheep breeding is the most susceptible to parasitic diseases branch of animal husbandry. Parasitoses cause huge economic damage in the form of forced slaughter, reduction of meat and wool productivity [1,3]. Many helminthiasis are zoonoses and therefore the harm caused by parasites is not limited to economic losses in this industry, but acquires social significance [1,2].

For our region, scientists have developed recommendations that made it possible to more effectively combat parasitic diseases of sheep. Technological methods of keeping and feeding sheep are no less important for the prevention of helminthiasis [4]. However, it is not yet possible to achieve a radical change in the recovery of animals from parasites.

Helminthiasis of animals, in particular small cattle, is widespread and in rainy years favorable for the development of invasive elements of helminths, can occur in the form of enzooties with significant waste of animals, and primarily young animals. The main measures of zonal devastation of parasitic diseases of sheep can theoretically be represented as follows. In the territory of the region, in the process of phylogeny, a constantly renewable strong epizootic chain has developed; the causative agent of the disease is a susceptible animal — the external environment. To devastate sheep parasitosis, it is necessary to break this chain at the nodal links with the least labor and money. The invasion of new generations of sheep and the reintroduction

of adult livestock occurs in the second half of spring, after the beginning of the vegetation of grasses and the release of sheep to pastures. The sources of invasion are adult sheep and young animals of the previous year of birth (80%), priotary dogs and cattle (15%) and invasive larvae that have overwintered on pastures (5%). In June-August, natural sanitation (disinfection) of pastures occurs due to high soil surface temperature and dryness of atmospheric air, i.e. there is a short-term natural break in the biological cycle. [6,7,8,9].

According to some authors, [9, 10] describe that during the introduction of invasive larvae through damaged skin, after 1-2 minutes, lambs had a lot of swellings of bright red color, the size of a millet grain. Seasonal dynamics is characterized by a spring rise in the intensity of invasion in April-May. In the summer, the extent of the invasion does not change significantly. In the autumn-winter period of time, there is a decrease in both the intensity and the extensiveness of the invasion of rhabditates. In the age dynamics of infestation of small cattle S. papillosus we have noted that the maximum infection occurs in young animals of 6 months 78.0%, from 6 months to 1 year 62.0%, from 1 year to 2 years 33.0%. Lambs in the suckling period begin to become infected from the first days of their lives from mothers during suckling [13,14,15,16].

The purpose of the study. To study blood clotting in lambs infected with marshallagia, nematodes and habertii. To identify the difference in blood clotting in infected and healthy animals.

Research methods. The methods of helminthological, [5,12,17,18] morphological, hematological, bacteriological, biochemical, pathoanatomic and serological studies were used in the work (the coagulometer spectrometer SF -56 was used [5,12,17,18].

An accurate lifetime diagnosis for helminthiasis allows laboratory studies of the material taken from animals and the detection of eggs and larvae of helminths in it. Fecal samples are most often used, less often - urine, skin, contents of conjunctival cavities, scraping of perianal folds [12,19,20].

The conclusions in the work are based on the results processed using modern methods of mathematical statistics, such as the Student's criterion and variational analysis with the calculation of confidence intervals and confidence probabilities [21,22,23].

Blood clotting is one of the important defense mechanisms of organisms. The state of the clotting or anticoagulation systems of the blood depends on the nature of the effects and their magnitude. In some pathological conditions of the body, this process is disrupted, which can cause severe diseases.

The state of the coagulation and anticoagulation system of the blood in the Karakul lambs in the flock was observed from the moment the animals were grazing on pasture. All lambs were 1,5-4 months old, males - 25, females — 42. Lambs infected with marshallagiosis, nematodyrosis and habertiosis were mainly studied. Blood was taken in compliance with all the rules, in ready-made test tubes.

According to our observations, clinical signs of marshallagiosis and nematodyriosis in lambs appeared from the first days of invasion. But the bright symptoms of acute marshallagiosis and nematodyriosis appeared in the period from the 10th to the 20th day of invasion. During the histrotrophic phase of parasite development. Characteristic were the lethargy of animals, lack of appetite, an increase in body temperature to 41,5 — 42 ^{0}C, increased pulse rate to 80-120 beats / min, increased heart tones, arrhythmia, rapid 45-50 per minute), shallow breathing often with wheezing. Disorders of the digestive organs were observed, expressed in some lambs in the release of semi-liquid, fetid feces with an admixture of blood [20,21,22].

We determined for the entire period of observations, it turned out:

With marshallagiosis, on the 5th day after infection, the blood clotting time increased by 45 seconds compared to the initial one. on the 10th day for 47 seconds and on the 15th day for 57 seconds (P≤0,01).

From the 20th day of observation with marshallagiosis, the blood clotting time began to gradually decrease (261,2 ± 2,74 seconds) and almost reaches the initial level on the 65-70 day of invasion. (P≤0,05).

In nematodyrosis, the average background time before infection was 213,4±0,89 seconds. On the 5th day of invasion, as with marshallagiosis, the blood clotting time was significantly extended by 37 seconds, on the 10th day - by 39 seconds. greater than the original (P≤0,01). High values of blood clotting were reached, as with marshallagiosis, on the 15th day of helminth parasitization in the body and reached 260,06 ± 0,64 and exceeded the background time by 47 seconds. However, on the 20th day of the experiment, the blood clotting time decreased by 12 seconds compared to the previous one. This reduction in clotting time lasted up to 65-70 days, when it reached the initial values indicated in Table No. 1.

Table 1. Blood clotting time in Karakul lambs (seconds)

Name of helminthiasis	Mathematical parameters	Research time								
		Before infection	After infection, days							
			1	5	10	15	20-25	30	40	50	65-70
Marshallagiosis (n=5)	M±m	214,5 ±2,12	-	257,2 ±2,79	261,6 ±2,11	269,5 ±2,72	259,3 ±2,95	237,8 ±2,4	224,5 ±1,87	219,4 ±0,96	217,6 ±0,96
Nematodirosis (n=5)	M±m	213,4 ±0,89	-	250,0 ±0,89	253,6 ±1,0	260,8 ±0,59	248,4 ±0,95	238,6 ±1,8	225,6 ±2,2	220,8 ±1,38	214,8 ±0,68
Control (n=3)	M±m	213,0 ±2,19	-	211,0 ±3,01	212,2 ±2,9	209,4 ±1,89	209,5 ±2,55	209,7 ±2,44	211,7 ±2,54	208,7 ±2,49	207,7 ±2,54
Habertiosis (n=5)	M±m	212,0 ±0,72	254,85±1,42	262,5 ±1,09	267,7 ±1,02	272,3 ±1,09	235,5 ±1,85	-	235,60±1,47	230,5 ±1,41	226,8 ±1,26
Control (n=5)	M±m	210,2 ±1,18	210,2 ±1,35	213,8 ±1,09	217,8 ±1,41	218,2 ±1,3	219,5 ±1,75	-	218,4 ±0,98	217,6 ±1,34	216,4 ±1,52

In habertiosis, the average background blood time before infection is -212,0 ± 0,72 seconds. The table shows that the blood clotting time began to increase from the first days of invasion, although the dose of invasive larvae was significantly less than in marshallagiosis and nematodirosis [21,22,23].

On the first day of the invasion, the blood clotting time was extended by 42 seconds. Compared with the initial value (P≤0,001), on the 5th day it reaches 262,5 ± 1,09 seconds and was kept at this level until the 10th day of invasion .

The greatest prolongation of blood clotting time was observed in the experimental helminthiasis we examined, on the 15th day during the preimaginal development of the helminth it reached 272,3 ± 1,06 sec, 60 sec more than the initial value (P ± 0,01).

In the future, a shortening of blood clotting time was observed, but unlike marshallagiosis and nematodyrosis, habertiosis had a protracted character and was still higher than the baseline on the 70th day. (P±0,01).

Thus, analyzing the obtained results of changes in blood clotting time in Karakul lambs with different intensity of invasion and with various helminthiasis, we can say that with the above helminthiasis with the onset of invasion and during the period of preimaginal development of the parasite, there is an elongation of blood clotting time, which indicates a slowdown in blood clotting ability, which reaches its maximum on the 15th day of invasion, in the post - vaginal period of development by shortening the blood clotting time almost to the initial level, which means about gradual recovery and acceleration of blood clotting. Apparently, the age of the animal is important during the invasive process, in younger it is more difficult. This is evidenced by the results of determining the blood clotting time in experimental habertiosis in 3-month-old lambs, although the dose of invasive material is not high, but the degree of increase in blood clotting time is higher and longer than in experimental marshallagiosis and nematodirosis.

Discussions and Conclusions. Thus, our studies have revealed changes in blood clotting depending on the severity of the pathological process. We created a group of helminthically sick animals (lambs) by selecting lambs with invasive larvae of marshallagias, nematodes and habertii. Studies of the coagulation and anticoagulation system of the blood have shown that helminths, along with significant changes in the functional state of the digestive and central nervous systems, the increase in other pathological shifts that worsen in parallel with the development of invasive gastritis, there is also a progressive drop in blood coagulation properties. In all experimental animals, from the first days of invasion, the clotting time begins to progressively lengthen during the preimaginal development of helminths. With the beginning of the imaginal period, the clotting time is somewhat shortened compared to the initial values. The slowing down of blood clotting time with its subsequent acceleration depends on the stages of development of invasive helminth larvae in the animal's body. 5 days after the experimental infection, the first molt and migration of invasive marshallagia larvae from the abomasum cavity to its mucosa is completed, this coincides with the beginning of a progressive prolongation of blood clotting time, as well as slowing the formation of thrombin. On the 10th day of invasion, when the formation of nodular lesions on the wall of the abomasum and the tissue development of the marshallagia is completed, blood clotting continues to slow down, and on the 15th day, during the period of mass exit from the wall of the abomasum into the cavity of rather large preimaginal marshallagias and the most injured walls of the abomasum and its glandular apparatus, the greatest slowdown in blood clotting occurs. The 20-25 day of invasion, when the last molt of marshallagia ends and their transition to the imaginal stage begins, is characterized by a shortening of blood clotting time, but the formation of thrombin remains delayed. From 30 to 65 days during the period of parasitization of imaginal nematodes, the blood clotting time was shortened almost to the initial one, which indicates an acceleration of blood clotting.

Contribution of the authors. All work with lambs, taking blood, wool, feces and urine of sheep, including physiological and clinical observations, was carried out by Khudzhanova M.A. Literary review, article writing and statistical processing was carried out by Vakhidova A.M.

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