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Host-parasite relationship of gastro-intestinal helminthes (*B. Trigonocefalium, Haemonchus Contortus, Trichostrongylus, Nematodirus*)

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Abstract
It is expensive from the economical point of view to bring the blood indices of animals during mixed invasion after 30 and 60 day of anthelminthic treatment in correspondence with the blood indices of animals of the control group; and rehabilitation of blood indices of ill animals up to indices of healthy ones is difficult to get and remains different.

Keywords: Gastro-Intestinal, Helminth, Host, Sheep, Parasite

1. Introduction

Host-parasite relationship of helminthes and cattle are based mainly on the dependence on the period of their existence in the body. Helminthes of *Hemonxus, Nematodirus, Bunostom, Trichostrongylus nematodirus* Spathiger are able to exist in the host organism up to 5-6 months, *H. contortus, Trichostrongylus axei* – up to 8 months, *B. trigonosefalum* – up to 12-14 months. Their existing in a host body is longer if they live in helminthes' association (a lot of helminthes exist at the same time). Quantity of erythrocytes, hemoglobin, calcium, phosphorus in blood reduces depending on the condition of infected animal's organism, the intensity and stage of the disease. Capacity of the liver to product glycogen weakens and as a result the production of A and B12 vitamins drops, and because of weakening of the body's immune mechanism occur complications (Borisov M.A.-2009; Asadov S.M.-1960; Petrov Y.F.-2005; Karmaliyev P.S.- 2004, 2005).

Material and methods: About 25 head of cattle and 10 head of sheep naturally infected with fascioliasis were tested at the villages of Boyukduz and Jahri of the Babak region of Nakhchivan Autonomous Republic and their blood indices were examined in the laboratory. Young heifers at the age of 1-2 years passed doubly through the exactly scatological examination and after that 3 heads of heifer infected with mixed invasion were selected and compared with 3 heads of other heifers. Observations of heifers selected for an experiment during the clinic examination showed that their pulse was 17 ictus in a minute, breathing number was 7, visible mucous membranes pale, animals were gasping for breath; reduction in response to the external environment, appetite reduction, pain in the liver, dilution of the stool, weakness, frequent dropping-off to sleep in the pasture were observed; there was also reduction in live weight of 10-15 kg in comparison with healthy animals.

Process of the experiment: It is determined that during fascioliasis blood hematological indices of animals vary depending on the disease course. The quantity of hemoglobin in the blood decreases and makes 5.9+0.2% below the norm among cattle and 6.9+2.1% among sheep. Also, the quantity of erythrocytes among cattle is $(4.8+0.1)x10^{12}$, among sheep $(5.8+0.14)x10^{12}$; while hemoglobin and erythrocytes are reducing, the quantity of white cells, on the contrary, increases – $(12.7+0.2)x10^{9}$ among cattle, $(14.8+0.3)x10^{9}$ among sheep. The amount of eosinophils in blood leukogram of cattle increases during the experiments in 4.6 times, in leukogram of sheep – in 3.1 times. During fascioliasis level of bilirubin in the blood biochemical indices among cattle changes in the range of 0.6-0.8 mg/%, uric acid – in the range of 24.8-27.6 mg/%. Increase of bilirubin level in blood confirms that injury in the liver parenchyma goes on and decomposition of hemoglobin is observed. As a result of destructive processes in the liver arises protein metabolic disorder. When trematodes take place in the bile-excreting ducts, they affect the tissue and restrict permeability or occlude the ducts and

stop bile outflow, as a result of that inflammatory process start in bile ducts and gall-bladder walls and ducts become thicker. At the same time decreases the quantity of calcium element among cattle. In addition to the aforesaid processes derangements during fascioliasis occur also in other organs and systems; fascioliasis developing serious pathological processes in the body disturb functioning of the heart and circulatory system. As a result sink the quantity of erythrocytes, hemoglobin, calcium and phosphorus which take part in control of metabolism in the body. This process going on in the liver weakens the production of A and B_{12} vitamins. All these weaken the resistibility of the organism and result in disruption of the immune system; the disease takes on a severe form. Because of weakening of defense-barrier properties of the organism the liver enlarges, scleroses and curing, and become of brick color. When the liver was dissected, larval form of fascioliasis shimmering in yellow, green color was observed. As a result of metabolic disorders in the area of the chest, near the throat bottom accumulates the filtrate, which causes formation of tumors and inflammatory processes. For comparison along with fascioliasis the other intestinal worms were visible in the stomach of 5-6-month-old calves in this region; as compared to healthy calves the decrement of vital energy in the body, reduction of phosphorus amount, lack of vitamin were observed. It has been determined by us that during cestodiasis, trematodiasis, nematodiasis changes the composition of electrolytes in the blood, processes of assimilation and dissimilation of micro and macro elements in the body are reduced and as a result all nutrition processes of an animal weaken and its organism gradually goes in the direction of lethal outcome.

During helminthiasis, in the period of mixed participation of many helminth species, besides of the other pathogenic manifestations, helminthes also affect morphological parameters of blood (Tables 1 and 2).

Table 1: Blood morphological parameters of 1-2-years-old cattle during mixed helminth acute infection (*Nematodirus, Xabertus, Hemonxus, Trixostrongilus*)

Blood indices	№	Control group, animal	Days of examination				
			Period after infection			After treatment	
			15th day	30th day	50th day	30th day	60th day
Haemo-globin, q/%	1-3	5.4+0.1	4.3+0.2	3.7+0.2	3.7+0.1	4.3+0.1	4.9+0.1
	1-3	5.3+0.2	4.2+0.2	3.6+0.1	3.5+0.2	4.3+0.3	4.9+0.2
	1-3	5.0+0.3	4.1+0.5	3.8+0.2	3.3+0.1	4.2+0.1	4.7+0.3
Erythro-cyte, 1012/l	1-3	5.0+013	4.3+0.21	3.8+0.32	3.9+0.21	4.5+0.20	5.3+0.23
	1-3	5.2+0.24	3.8+0.37	4.1+0.23	4.3+0.13	4.3+0.11	5.4+0.12
	1-3	5.5+0.23	3.6+0.27	4.2+0.21	3.9+0.31	4.5+0.33	5.2+0.27
Leuko-cyte, 109/l	1-3	5.2+0.1	5.7+0.1	6.8+0.1	7.5+0.1	6.9+0.1	6.0+0.1
	1-3	5.2+0.2	5.5+0.2	7.0+0.1	7.7+0.3	6.8+0.1	5.9+0.2
	1-3	5.4+0.1	5.5+0.3	7.0+0.2	7.7+0.2	6.6+0.3	5.6+0.1

Table 2 shows that on the 15th day the quantity of hemoglobin is 3.1 g/%, on the 30th day – 3.4 g/%, on the 50th day – 4.2 g/% and erythrocytes are 3.3 g/% 1012/l, 3.5 1012/l, 3.9 1012/l correspondingly. These indices of animals in the control group were lower than those of the healthy animals.

Table 2: Indices of leukogram of young 1-2-years-old cattle infected with mixed invasion.

Blood indices	№	Healthy animals	Days of examination (M+m)				
			Period after infection			After treatment	
			15th day	30th day	50th day	30th day	60th day
Neutrophils:	1-3	0.1	1	1.6	1.7	0.7	0.6
young	1-3	23.1+0.1	28.6+0.1	30.3+0.2	31+0.3	26+0.1	27+0.2
stab segmental	1-3	28.9+0.2	36.1+0.2	35.6+0.1	36.2+0.2	25.6+0.2	20.0+0.1
Basophil	1-3	2.6+0.2	5.0+0.3	5.6+0.1	5.8+0.3	4.3+0.2	4.8+0.1
Eosinophil l	1-3	3.5+0.1	4.86+0.1	4.93+0.2	4+0.2	4.7+0.1	5.5+0.2
Monocyte	1-3	2.2+0.2	2.93+0.2	3+0.1	3.3+0.3	2.2+0.2	3.1+0.1
Lymphocyte	3-1	40.19+1	36.40+0.1	18.1+0.2	17.3+0.1	33.3+0.3	32.7+0.1

The aforesaid facts confirm that during mass mixed helminth infection in erythrocytes, hemoglobin, leukocytes begin pathological processes on the 15th, 30th, 50th day. Cases of mobilization of protective potency in the organism against helminthes also were observed. As a result, the formation of pathological processes was observed in nidi form.

Increase in the quantity of neutrophils in the range of 31.1-52.1% was observed on the 15th, 30th and 50th days after infection. But quite the contrary, stab neutrophils begin to decrease.

After 30-and-60-day treatment of these animals with albena and albendazol blood parameters of animals from the test group don't approximate the blood parameters of animals from the control group; blood parameters of animals which have survived the disease don't become like those of the healthy animals and remain different.

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