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Biochemical Blood Parameters Of Sheeps With Estrosis.

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ABSTRACT

In the pathogenesis of sheep estrosis, mechanical and toxic effects, allergic reactions occupy a significant place. Excretory-secretory components of the larvae of the cavity gadfly cause chronic intoxication of the host, manifested by a wide range of disorders of vital systems, cause the transformation of biochemical parameters of blood, reflecting a certain degree of compensatory capabilities of the animal. The study of biochemical parameters allows to determine the pathogenetic nature of the functioning of the parasitic system in sheep estrosis.

Keywords: sheep, estrosis in sheep, invasions in sheep.

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INTRODUCTION

Parasitic larvae of sheep gadfly have a multifaceted effect on the host organism. The larvae, armed with thorns, injure the mucous membrane of the nasal cavity and paranasal sinuses, having repeatedly increased in volume and mass in the course of ontogenesis, they put mechanical pressure on the adjacent tissues and cause their partial or complete destruction.

Many aspects of the pathomorphogenesis of sheep estrosis are still not studied. Correlative relationships, interdependence of processes, pathogenetic features of the functioning of the parasitic system during sheep estrosis are not identified.

MATERIAL AND METHODS

The studies were carried out on lambs of 4 months of age (ten heads, divided into 3 groups, five animals in each group. Animals of the first group were artificially infected at a dose of 50 copies of sheep gadfly per one animal, the second - 25, animals of the third group served The pathogenesis and toxic effects of larval gonfalon larvae were studied based on the analysis of total lactate dehydrogenase (LDH) activity. It was found that the rate of increase in total LDH activity in sheep of the first group varied within 1.5 - 1.85, the second - 1.3 - 1.41; In animals of the third group, the activity of the enzyme did not undergo changes in activity.

The activity of serum transaminases (aspartate aminotransferase — AsAT and alanine aminotransferase — AIAT) was determined, Alkaline phosphatase (AF), gamma glutamyl transpeptidase.

Table 1: The activity coefficient of enzymes for transamination of alkaline phosphatase, glutamyltranspeptidase in patients with sheep estrosis

Observation time, in days	Indicators, groups of animals											
	1 group				2 group				3 control group			
	AsAT	AIAT	AF	γ GT	AsAT	AIAT	AF	γ GT	AsAT	AIAT	AF	γ GT
60 days	1,34	1,94	1,87	1,2	1,27	1,94	1,18	1,48	1,91	1,42	1,14	1,75
90 days	1,93	2,16	1,51	1,6	1,42	2,62	1,03	1,71	1,94	1,58	1,23	1,74
120 days	1,34	1,09↓	1,2↓	1,33	1,62	1,72	1,67	2,0	1,76	1,09	1,69	1,48
Average values	1,64	-	-	1,37	1,43	2,0	1,2	1,73	1,87	1,36	1,35	1,65

Table 1 shows data indicating a slight increase in enzyme activity. In all other cases, the activity of enzymes was above the level of the original data.

The greatest increase in the activity of AsAT and AIAT (1.93; 1.94 times) was noted 60 days after infection with *O. ovis* larvae of the first group of sheep. After 90 days, the animals of this group showed a decrease in AsAT (compared with 60 days) by 14% and an increase in AIAT by 11.3%.

In the animals of the second group, by the 90th day of observations, these indicators increased respectively by 11.8% and 35%, in the animals of the third group, the activity of AsAT almost did not change, ALAT increased by 11.2%. By the 120th day of experience in sheep of the first group, the tendency of a decrease in the activity of AsAT increased. Compared with baseline data, aspartate transaminase remained increased 1.34 times. AIAT was at the level of the original data.

In animals of the second and third groups of AsAT, by 120 days of the experiment, the initial data were higher by 1.62 and 1.76 times, respectively; AIAT - by 1.72 and 1.09 times.

The activity of alkaline phosphatase in sheep of the first group increased by 1.87 times by 60 days of experience, by 90 days decreased by 19.3% in comparison with the data of 60 days. By 120 days, alkaline phosphatase in sheep of the first group decreased by 1.2 times in comparison with the initial level.

In animals of the second and third groups, the activity of alkaline phosphatase after 60 days increased by 1.18 and 1.14 times, after 90 days remained elevated by 1.23 times, and by 120 days it exceeded the baseline levels in the second group at 1.67, in the third - 1.69 times.

The activity of glutamyltranspeptidase in animals of the first, second and third groups after 60 days increased by 1.2; 1.48; 1.75 times. After 90 days, an increase in indicators was observed only in sheep of the first two groups. The growth rate of activity of this enzyme was higher than the baseline in the first group by 1.6, the second - 1.71 times.

By day 120, the level of activity of γ GT was higher than the initial data in the first group by 1.33, the second — 2, and the third — 1.48 times.

RESULTS AND DISCUSSION

The variability of non-specific biochemical changes in animals of all experimental groups seems to reflect the varying degree of compensatory abilities of adult animals for the introduction of the parasite.

The decrease in the activity of AIAT and AF below the level of initial data in sheep of the first group, in our opinion, can not be completely explained by the theory that sees the causes of enzymatic shifts in the violation of the permeability of cell membranes and the release of enzymes into the blood. It is possible that in adult (three-year-old) sheep, adaptation during repeated infusions of the invasive principle is characterized by the peculiarity of the course of biochemical processes.

Differences may also be due to the unequal duration of the catabolic and anabolic phases, unequal loss of tissue resources, a decrease or increase in the concentration of various ingredients in the tissues and biological fluids of sheep invaded by gadfly larvae.

The activity of total lactate dehydrogenase LDH in animals of all experimental groups increased throughout the entire observation period.

The obtained results of the studies allowed us to track the dynamics of the increase in the activity of the studied enzymes during the development of the imaginal phases of the sheep gadfly larvae. AIAT activity increased after 90 days (in animals of all experimental groups). At this time (March) the larvae of the abdominal gadfly reach 3 stages of development, have the greatest mass, emit the largest number of metabolites. Their motor activity increases due to the necessity of release into the environment for pupation. By the 120th day of the experiment (April), the animals of the first group showed a decrease in the activity of the enzymes under study (with the exception of the isoenzymes LDH₄, LDH₅). In animals of the second and third groups, the studied parameters remained at a fairly high level. The maximum values (in animals of the experimental groups) were reached by the activity of LDH₄ and LDH₅ (table 50-55).

It cannot be ruled out that parasitic larvae and the metabolites secreted by them are, for invasive sheep, the stimuli of the force at which nonspecific reactions of the host organism may develop.

The duration of the period of increased enzyme activity in patients with estrosis in animals may be due to the fact that the leaching of enzymes from the cells and a decrease in their number in the cell stimulates (by the type of "feedback") increased synthesis of the latter. It is not excluded that hyperfermentemia is accompanied by the development of dystrophic and regenerative processes and can continue as long as the synthetic functions are preserved in the cell.

CONCLUSION

Based on this theory and the results of the obtained data, it should be assumed that a significant decrease in enzymatic activity in invasive sheep is probably due to an increase in dystrophic processes in the organs and tissues of the animal under the influence of the causative agents of estrous invasion. In young animals, regeneration processes predominate and, it is likely that the development of sheep gadfly larvae is mediated by the phenomenon of increased enzymatic activity.

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