A COMPLICATIONS FROM PYROPLASMOSIS IN DOGS

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Babesiosis, Pyroplasmosis – an acute or chronic naturally transmissible focal disease of dogs, cats and fur-bearing animals, is characterised by fever, depression, anaemia, mucous membrane discharge, cardiovascular, nervous and digestive system disorders. [1] In dogs, the pathogen is Babesia (Pyroplasma) canis. [3]

Without appropriate treatment and following recovery, pyroplasmosis leads to the death of the dog in more than 90% of cases. The intensity of the symptoms can be influenced by: the age of the pet, the severity of the disease, how quickly the disease is detected and begun. The prevalence of the parasitic disease, according to the World Health Organization, ranks 4th in the world in terms of both human and animal health damage compared to other pathologies. [2]

In the pathogenesis of babesiosis there are two main mechanisms - an invasion into erythrocytes with subsequent lysis and an immune response to parasitemia. The rapid multiplication of Babesia leads to intoxication of the body. As a result of intravascular haemolysis, massive destruction of erythrocytes begins, causing intense strain on the cardiovascular and respiratory systems. The heart and lungs try to compensate for the lack of oxygen and eliminate the excess carbon dioxide. The destruction of red blood cells in pyroplasmosis occurs very quickly, and the dog can develop a critical state on the third day after infection. The kidneys and liver function to reverse intoxication and remove destroyed red blood cells from the body. [3]

The most common consequences of pyroplasmosis in dogs are renal failure and toxic hepatitis. The possibility of contracting borreliosis (Lyme disease) from a tick bite cannot be excluded either. The body becomes especially weak after an illness, and the therapy against the parasite can also have an aggressive effect on the internal organs. The intense reproduction of babesia and their toxic products lead to progressive haemolysis of erythrocytes, resulting in acute anaemia. Large amounts of haemoglobin are released and partially converted to bilirubin. This causes the development of haemolytic jaundice. [4]

Anaemia leads to the development of hypoxia in animals, which as a compensatory reaction of the body reflectively leads to an increase in respiration rate and depth, acceleration and amplification of heart contractions, an increase in the minute blood volume and an increase in the blood circulation rate (myocardial hypertrophy). The change to anaerobic metabolism causes the accumulation of toxic products of metabolism in the cells and general intoxication of the body. Dystrophic
and inflammatory processes are developed in the liver, pancreas, kidneys, spleen; protein, water, mineral metabolism, acid-base state, osmotic pressure (edema), coagulopathies are also disrupted. [2]

The serum levels of urea, creatinine, bilirubin, amylase and transaminase activity are significantly increased in dogs with babesiosis. Renal failure can be caused by blockage of the renal tubules by haemolysed red blood cells and the use of potent toxic drugs for treatment. An accumulation of dead red blood cells leads to oxygen starvation, respiratory and cardiac failure, and brain cell death.

Microthrombosis is possible as a result of a large number of destroyed red blood cells, which can develop into convulsions that can lead to comas. The chronic form of the disease occurs in dogs with good immunity or in dogs that have previously had pyroplasmosis. It can also be the reason for weak long-term resistance of the organism.

A few scientific studies have used the definition of multiple organ failure syndrome (POIS) for complicated forms of babesiosis in dogs. It is developed as a consequence of disruption of mechanisms regulating pro-inflammatory and anti-inflammatory activity, leading to generalised inflammation and self-inflammation [3].

Hepatoprotective medication can be used to normalize liver function. Therefore, a dog after pyroplasmosis should take kidney and liver medication (legafiton, hepatovet, renal, carsil, essenciale) for at least a month. A temporary or permanent diet for sick dogs (eliminating anaemia, liver support, pancreatic problems, renal failure) and treatment for ectoparasites for one year are obligatory. [1]

References: