

## Pathological changes in pregnant female mice and offspring in the course of vertical transmission of *Babesia microti* – an experimental model

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*Babesia microti* is an obligate, intraerythrocytic parasite of humans and rodents. Babesiosis causes haemolytic anaemia and liver and kidney dysfunction, and is especially dangerous for immunocompromised individuals. There are three routes of transmission of the pathogens: while the main route is by tick bite, transmission via blood transfusion is also possible. Although cases of vertical transmission of *B. microti* have been described in humans and animals, little is known about the impact of *B. microti* infection on pregnancy. The aim of our study was to trace pathological changes in pregnant females infected with *B. microti* and in their pups with congenital infection. Female BALB/c mice were infected with *B. microti* on the twelfth day of pregnancy. Organs of dams and embryos and/or offspring (if possible) were isolated. Specimens were fixed in 10% neutral formalin for histopathological examination. The paraffin technique was used and specimens were stained with hematoxylin and eosin or Giemsa. The *B. microti* infection was monitored in BALB/c dams using DiffQuik staining, and PCR targeting 18s RNA gene. Pathomorphological and physiological changes were recorded in various organs. Blood stagnation, haemolysis, hematopoiesis and lymphoid follicle growth were observed in spleen tissue. In the liver, necrosis and degeneration of parenchymal hepatocytes were found. In the kidneys, degeneration of the parenchymal cells and necrosis of the tubular cells was observed. The brain tissues presented edema, neuronofagia, necrosis of neurons and neuronal vacuolation. Necrosis of cardiomyocytes was found in heart tissues. Atelectasis, emphysema and interstitial inflammation were observed in the lungs. Babesiosis caused inflammation in the wall cells of the uterus, both in pregnant and non-pregnant females during the acute phase of infection. Females with acute babesiosis demonstrated pathological changes in embryo development, resulting in malformation of limbs, growth inhibition and death. The acute phase of babesiosis causes pathological changes in the maternal tissues and inhibits development of the offspring, which may result in pregnancy termination, inhibition of growth or the death of the offspring.

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