Proceedings of the 12th International Congress of the World Equine Veterinary Association

WEVA

November 2 - 5, 2011
Hyderabad, India

Reprinted in IVIS with the Permission of WEVA Organizers
Babesiosis is described as the main parasitosis affecting equines due to the direct and indirect effects it causes to the health of these animals (FRIEDHOFF, 1988). The economical implications associated with equine babesiosis include the cost of the treatment, especially of animals presenting acute infections, abortion, impaired performance, death and restrictions related to international trade and participation in equine competitions (GUIMARÃES et al., 1997; MARTIN, 1999).

The disease is transmitted by ticks and caused by parasites located inside the erythrocytes. It may be caused by different protozoa: *Babesia equi* (or *Theileira equi*) and *Babesia caballi*. Horses may be parasited by one of both species of babesia at the same time (MELHORN e SCHEIN, 1998). Babesiosis affects equines, mules, donkeys and zebras (PURNELL, 1981). The disease is endemic in many tropical and subtropical areas of the world, as well as in temperate zones (SCHEIN, 1988; BRÜNING, 1996).

Due to the fact that it is still undefined, the taxonomy of *Babesia equi* has been largely investigated during the last years. Some authors describe that the family Piroplasmidae should include *Babesia caballi* and the genus *Theileria equi* (not *Babesia equi*), once, different from other babesia species, the latter begins its cycle inside lymphocytes before it parasites erythrocytes, and divides into four merozoites, as some Theileria species.

Epidemiological studies on equine breeding in South America show great intensity of infestation by the ticks *Anocentor nitens*, *Boophilus microplus* and *Amblyomma cajennense* associated with great levels of babesia infection (LEITE et al., 1988; BATTSETSEG et al., 2001). In Brazil, *Boophilus microplus* has an important role in the transmission of *Babesia equi*, considered to the main vector in the transmission of the disease (CORRÊA et al., 2004).

The observation of cases of congenital equine babesiosis suggests the occurrence of transplacental transmission of the agent (GUIMARÃES et al., 1954). Infection of foals in utero may occur, leading to the birth of normal term foals that may develop signs of the infection days after birth (PHIPPS e OTTER, 2004). The occurrence of transplacental transmission of *Theileria equi* in horses was determined by evaluating 50 young male and female horses of the breed Lusitano Horses as well as their respective mothers.
Colts and fillies were evaluated as soon as they were born. Total blood samples were collected from both mother and offspring within the first five hours right after the parturition to analyse *Theileria equi* and *Babesia caballi* through the RT-PCR technique. The data show us that there is a possibility of transplacentary transmission of *Theileria equi* (RONCATI et al., 2010).

The disease is characterized by fever, depression, ataxia, anorexia, weakness, epiphora, mucous nasal secretion, icterus and hemoglobinuria, occurring typically one or two weeks after the tick parasites and contaminates the host (KNOWLES, 1980; ZAUGG, 1990). According to ALLSOPP (1994), after the period of infection and incubation, from 8 to 10 days, the first clinical sign is the increase in temperature, associated with the presence of the parasite in the blood stream.

Clinical disease associated with the infection by *Theileria equi* is much more serious than that caused by *Babesia caballi*, and the mortality rate is greater. It is believed that foals born in endemic areas present asymptomatic infection as they lose maternal antibodies, and they develop strong active immunity, that depends on the constant presence of the microorganism. Stress caused by training, transportation, adverse weather or pregnancy may lead to the clinical disease in equines that carry the microorganism. Death may occur in 48 hours or the chronic disease (fever and anemia) may persist for months. Equines bred in endemic areas tend to be carriers of babesia without presenting any clinical signs (REED & BAYLY, 2000).

The definitive diagnosis of babesiosis is based on the demonstration of parasited erythrocytes in blood smears, or on positive serology. As parasitemia does not last long and generally there is no hemolysis, serological results normally establish the diagnosis. Antibodies against babesia are detectable after 14 days of the infection by means of complement fixation or indirect immunofluorescence (KNOWLES, 1980; ZAUGG, 1990). The agent is rarely observed when parasitemia is low, and they are easily confounded with artifacts of the technique due to their small size. During the intra-erythrocyte reproductive cycle, they form a tetrad known as “Maltese cross”, an important characteristic of this agent (JAIN, 1993; KERBER et al., 1999). The observation of clinical signs together with the demonstration of the presence of Babesia or Theileria in stained blood smears are enough for the diagnosis. Due to the difficulty in the detection of low numbers of the parasite in microscopic examination, serological tests such as complement fixation and ELISA have been used as diagnostic methods.