

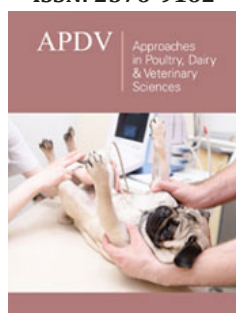
Equine piroplasmosis in Brazil

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Abstract

Equine piroplasmosis is an infectious and non-contagious disease caused by the hemoprotozoa *Babesia caballi* and *Theileria equi*. This disease causes serious economic damage to equine industry in the world. In Brazil, equine piroplasmosis is transmitted mainly by *Dermacentor nitens* and *Amblyomma sculptum* ticks. The disease has gained great national notoriety, mainly because Brazil has the largest horse herd in Latin America and the third largest in the world. Infected animals may present fever, anemia, jaundice, subcutaneous edema, especially in the eyelids; splenomegaly, hepatomegaly and hemoglobinuria. The diagnosis of equine piroplasmosis is made by clinical signs and blood smears, in which erythrocytes parasitized by the agents can be observed. Serological tests, such as cELISA and complement fixation may be used and are recommended by OIE. PCR may be used to confirm the infection.

Keywords: hemoprotozoa; *Babesia caballi*; *Theileria equi*; ticks

Mini Review

Equine piroplasmosis is an infectious and non-contagious disease caused by the hemoprotozoa *Babesia caballi* and *Theileria equi*. This disease causes serious economic damage to equine industry in the world [1]. Losses associated with this disease are related to clinical manifestations, treatment cost, abortions, loss of activity, death, and restriction to international transit of seropositive animals [2]. The disease has gained great national notoriety, mainly because Brazil has the largest horse herd in Latin America and the third largest in the world [1].

Equine piroplasmosis is also known as nutaliosis, equine biliary fever, equine malaria, horse tick fever, equine babesiosis, and equine theileriosis. This disease is transmitted in the country mainly by *Dermacentor nitens* and *Amblyomma sculptum* ticks [3]. *D. nitens* can be found throughout the national territory, as well as in several other countries from the southern United States to northern Argentina [4]. *A. sculptum* can be found in the peri-Amazonian regions of the country, including the states of Espírito Santo, Rio de Janeiro, Minas Gerais, Paraná, São Paulo, Goiás, Piauí, Mato Grosso do Sul and Mato Grosso [5].

The distribution of causative agents of equine piroplasmosis is associated with the geographic and seasonal distribution of its vectors and the disease occurs more frequently in regions with higher tick concentration, especially in the tropical regions of the country [3].

Piroplasmosis affects all species of horses, including donkeys, mules and zebras. The disease occurs through the bite of ticks contaminated with the agents but can also occur accidentally through contaminated blood or transplacentally. In ticks, transmission can occur at different stages of life, including transovarian transmission [1].

Following tick transmission, the incubation period is approximately 15 and 20 days for *T. equi* and *B. caballi* respectively. *T. equi* sporozoites invade lymphocytes and develop into merozoites. These are released into the circulation and invade red blood cells, causing erythrocyte destruction [7]. *B. caballi*, on the other hand, directly invades the red blood cells causing their destruction [7].

The disease has three clinical forms: acute, subacute and chronic. Despite the different forms, the animals usually present fever, anemia, jaundice, subcutaneous edema, especially in the eyelids; splenomegaly, hepatomegaly and hemoglobinuria. The immunity may decrease making animals more susceptible to other diseases [8]. The chronic form is considered the most common form of infection and is mainly characterized by weight loss and decreased performance [8].

The diagnosis of equine piroplasmosis depends on the stage of animal infection. In the acute phase, the diagnosis is made by clinical signs and blood smears, in which erythrocytes parasitized by the agents can be observed. In the subacute and chronic phases, serological tests are used, such as cELISA and complement fixation. PCR may be used to confirm the infection. For international transport of horses to non-endemic nations, the OIE recommends the cELISA test as one of the regulatory tests for the screening of horses for both *B. caballi* and *T. equi* [1,9]. This test has been considered the most sensitive test for detecting the disease in asymptomatic animals [1].

Treatment of equine piroplasmosis is based on two aspects: the elimination of clinical signs and the elimination of the agent. In endemic areas, total elimination of parasite burden in the host is not recommended and animals should be treated only to alleviate clinical signs and decrease recovery time [2]. In free areas, animals should be treated to eliminate the agent and prevent other animals from becoming infected [1]. There is no vaccine for the disease and prevention should be based on tick control, testing for confirmation of sick animals and avoidance of blood transfusion of not tested animals [1,2].

This disease is not considered a zoonosis, but ticks are considered important vectors of other diseases for humans, such as Lyme disease and Rock Mountain Spotted Fever [1,10].

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