"Namibiuvi" (bloody ears) or "peste de sangue" (bleeding plague) is a tick-borne disease that commonly affects dogs from rural and suburban areas in Brazil. It is caused by an intracellular organism called *Rangelia vitalli* that induces an immune-mediated hemolytic anemia. The purpose of the present study is to report the epidemiology, clinical, pathological, immunohistochemical and ultrastructural findings, management and outcome of 7 cases of *R. vitalli* infection in dogs diagnosed in the state of Rio Grande do Sul (RS), southern Brazil.

*R. vitalli* infection was observed in 7 dogs during the fiscal year 2002. The disease was seen most often during the hot season when ticks abounded. The ixodid ticks *Amblyomma aureolatum* and *Rhipicephalus sanguineus* were found infesting those dogs from rural areas and suburban areas, respectively. The disease was clinically characterized by persistent bleeding through mouth and tips and external surface of the pinnae, jaundice, fever, epistaxis, splenomegaly and generalized lymphadenopathy. Laboratory findings included regenerative anemia, spherocytosis, icteric plasma and bilirubinuria. Three animals died spontaneously. One animal recovered after therapy with imidocarb dipropionate and blood transfusion, and another recovered after treatment with doxycycline and corticotherapy. Two animals died after therapy with diminazene aceturate. Necropsy findings included diffuse pallor or yellow discoloration of the carcass and internal organs, enlarged spleen, generalized lymph node enlargement and hemorrhage in the gastrointestinal tract. Microscopically, *R. vitalli* was found in parasitophorous vacuoles in the cytoplasm of endothelial cells of blood capillaries. This organism was also seen free in the lumen of capillaries using transmission electron microscopy. Marked erythropagocytosis was observed in the lymph nodes. Both the parasite and the wall of the parasitophorous vacuole have ultrastructural features similar to other apicomplexan protozoan parasites. Tentative clinical diagnosis of *R. vitalli* infection was based on the history, clinical picture, hemogram and favorable response to therapy. A definitive diagnosis was made through microscopic examination of smears from the bone marrow sampled during necropsy or histological sections. The disease was successfully reproduced in one experimental dog inoculated IV with blood sampled from a parasitized dog. Immunohistochemistry for *L. chagasi*, *N. caninum* and *T. gondii* was consistently negative. No blood parasites or rickettsial agents were found inside the erythrocytes or leukocytes in both spontaneous and experimental cases. Gross and histological findings typical of diamidine poisoning, i.e., symmetric bilateral hemorrhagic encephalomalacia affecting the brainstem, were also observed in those 2 animals treated with diminazene aceturate. In both cases, the gross and histological lesions were consistent with *R. vitalli* infection, but no parasites were observed.

The first description of *R. vitalli* was published in Brazil by Dr. Antônio Carini (Revista Médica de São Paulo, v. 22, p. 459-462, 1908). There have been sporadic reports since then but none of them included transmission electron microscopy studies. A great deal of the information about this organism is contained in papers written in Portuguese and circulated in local, non-indexed scientific journals during the first half of the 20th century (1908-1948) which precludes the international scientific community from consulting these bibliographic sources. Over the years, *R. vitalli* infection has been misidentified as *Leishmania donovani*, *Toxoplasma gondii*, *Ehrlichia canis* and *Babesia canis* infections, bringing a lot of confusion to this topic. Based on our ultrastructural findings, we suggest that *R. vitalli* is a protozoan of the phylum Apicomplexa, and propose that the organism be officially recognized as a new pathogen of dogs. Molecular methods are necessary to better characterize this parasite. To the best of our knowledge, this organism has been described only in Brazil so far. Other countries appear to be free of this pathogen. The host range for *R. vitalli* infection seems to be restricted to dogs. Maybe wild animals are reservoirs of this parasite, since in rural areas the tick *A. aureolatum* has been found infesting domestic dogs as well as wild carnivores.

* To be considered for the CAHNL Graduate Student Presentation Award

CAHNL/RCTLSA 25 Guelph, May 16-19, 2004