

# Clinical, Hematological, and Biochemical Findings in an Outbreak of Abortion and Neonatal Mortality Associated with *Trypanosoma evansi* Infection in Dromedary Camels

CARLOS GUTIERREZ, JUAN A. CORBERA, MARIA C. JUSTE, FRANCISCO DORESTE, AND INMACULADA MORALES

*Department of Animal Medicine and Surgery, Veterinary Faculty, University of Las Palmas, Las Palmas, 35416 Canary Islands, Spain*

**ABSTRACT:** This article presents the clinical and laboratorial findings in an outbreak of abortions and high neonatal mortality attributable to *Trypanosoma evansi* infection in camels. A total of 16 females were diagnosed, 2 of which showed moderate signs of chronic form, particularly hyporexia and intolerance to exercise. The main laboratorial findings were regenerative anemia (hemolytic anemia), lymphocytic and monocytic leukocytosis, hyperproteinemia, hyperglobulinemia, hypoglycemia, serum urea increased, and serum iron decreased. The most characteristic finding in the examined females would be the uremia, probably due to the higher protein metabolism.

**KEYWORDS:** Camel; *Trypanosoma evansi*; laboratory findings; abortion; neonatal mortality

## INTRODUCTION

Trypanosomosis due to *Trypanosoma evansi* is a major enzootic disease of the dromedary camel. From the clinical viewpoint, camels affected of trypanosomosis usually show anemia, emaciation, recurrent fever, atrophy of the thigh muscles, edema of the dependent parts, corneal opacity, and diarrhea.<sup>1</sup> In pregnant female camels abortions can occur,<sup>2</sup> although the mechanisms responsible for the reproductive disturbances in trypanosomosis are not fully understood. There is only little information on clinical assessment in pregnant or just-delivered females in the available literature. This article presents the relevant clinical, hematological, and biochemical findings in an outbreak of

Address for correspondence: Carlos Gutierrez, Veterinary Faculty, University of Las Palmas, Arucas, Las Palmas, 35416 Canary Islands, Spain. Voice: 34-928451115; fax: 34-928451142.  
e-mail: cgutierrez@dpat.ulpgc.es

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abortion and high neonatal mortality associated with *T. evansi* in a camel herd in the Canary Islands.

## MATERIALS AND METHODS

A total of 16 pregnant or just-delivered dromedary females, aged 6–12 years, were diagnosed to suffer *T. evansi* infection, using wet blood film, microhematocrit technique, and stained blood smear. The affected animals were assessed by means of clinical examination and laboratorial analysis. The “positive” animals were consequently treated with trypanocidal drug (Cymelarsan®; Merial, Lyon, France). Blood samples were taken from the jugular vein using EDTA (for hematology), heparin (for parasitology), and without anticoagulant for serum collection. For comparison, 16 female camels belonging to another camel farm, with similar management conditions and negative to parasite detection tests and serological tests, were used as controls.

## RESULTS AND DISCUSSION

At clinical examination, 2 out of 16 affected animals showed moderate signs of chronic form, particularly hyporexia and intolerance to exercise. The remaining 14 animals did not show any clinical evidence of the disease. The aborted fetuses (five) were aged 6–8 months of gestation, approximately. Of the eight premature and weak calves born from the affected females, only one survived. At stained smear examination, anisocytosis and immature erythrocytes were observed in four animals from the outbreak group. The hematological data would indicate anemia and leukocytosis in the examined animals. Both findings are common in trypanosomosis in camels.<sup>3,4</sup> Clinical biochemistry showed significant variations in total proteins, A/G ration, glucose, urea, and iron. Laboratory parameters in all affected camels returned to normal ranges within 3 weeks after trypanocidal treatment. The hypoproteinemia is common in trypanosomosis due to hypergammaglobulinemia that the patients suffer as a response to infection.<sup>5</sup> The hypoglycemia is also common in trypanosomosis. Jaktar and Singh (1974)<sup>6</sup> described that parasite count is inversely proportional to glucose concentration. Uremia showed a significant increase in the outbreak group. The fact that creatinine did not suffer significant variations with respect to the control group suggests that there were no renal failures but an increased catabolism of body proteins. Uremia is not a common finding in trypanosomosis, but it could appear in pregnant or just-delivered females related to disease due to the higher metabolic requirements. Serum iron levels showed a significant decrease in the outbreak group. These findings have also previously been reported and would be due to a decrease in iron-transporting protein.<sup>7</sup>

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