



Research Journal of **Parasitology**

ISSN 1816-4943



Academic
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www.academicjournals.com

An Outbreak of Trypanosomiasis (Surra) in Camels in the Southern Fars Province of Iran: Clinical, Hematological and Pathological Findings

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Abstract: *Trypanosoma evansi* is the cause of trypanosomiasis (Surra) which multiplies in the blood and body fluids of camel. Based on author knowledge, outbreak of trypanosomiasis has not been reported in Iran yet. Camels in Southern Fars province of Iran, suffering from mortalities and abortions, were examined clinically. Blood samples were prepared from affected camels. Haematologic indices were measured. Dead camels and aborted fetuses were necropsied and macroscopic findings were recorded. Sick animals were treated by Quinapyrimine sulfate (quinaject). Clinical signs such as weakness, lethargy, tachycardia, fever, pale mucosa, subcutaneous edema in brisket and eyelids, nasal and ocular discharges and weight loss were observed. Here we describe an outbreak of trypanosomiasis in South of Fars province of Iran.

Key words: Trypanosomiasis, camel, outbreak, Iran

INTRODUCTION

Trypanosoma evansi is the cause of trypanosomiasis (Surra) which multiplies in the blood and body fluids of camel. The parasite is the first pathogenic trypanosome to be identified in 1880 in India. The case fatality rate in camels is nearly 100% if untreated. The main clinical findings are intermittent fever, progressive anemia, edema of dependent parts of the body, dullness, listlessness, loss of body condition despite a good appetite. Surra is one of the most important diseases of camels and losses are due to reduced productivity, mortality and cost of treatment. The disease has wide distribution in areas of Africa, Middle East, Asia and central and South America (Radostits *et al.*, 2000). *Trypanosoma evansi* was diagnosed for the first time in Iran in 1932 (Rafiee, 1979). Surra has been reported in Pakistan (Hasan *et al.*, 2006), Southern Ethiopia (Pregram and Scott, 1976), Mali (Diall *et al.*, 1993), Jordan (Abo-Shehada *et al.*, 1999), Chad (Delafosse and Doutoun, 2004), Kenya (Njiru *et al.*, 2004), Mauritania (Jacquet *et al.*, 1994), Somalia (Dirie *et al.*, 1989). An outbreak of abortion and neonatal mortality associated with *Trypanosoma evansi* infection in dromedary camels has been reported in Canary Islands (Gutierrez *et al.*, 2005). In the present study, we report an outbreak of trypanosomiasis in camels in the Southern Fars province and describe the clinical, hematological and necropsy findings.

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MATERIALS AND METHODS

The study was conducted in year 2005 in Fars province of Iran. Following of repeated abortion and occurrence of clinical signs such as weakness, lethargy and high fatality rate in camels of South of the Fars province, one of the camel herd (N = 30) was examined clinically. Blood samples were obtained from affected camels. Haematologic indices including packed cell volume, hemoglobin and total and differential White Blood Cell (WBC) count were measured by an automatic cell counter: model Sysmex KX-21, Japan (Burtis and Ashwood, 1994). Blood smears stained with Giemsa were also prepared. Dead camels and aborted fetuses were necropsied and macroscopic findings were recorded. Representative samples of tissues were fixed in 10% buffered formalin, embedded in paraffin, cut at 5 μ m, stained with hematoxylin and eosin and examined with a light microscope. After the diagnosis of the disease, sick animals were treated by Quinapyrmine sulfate (quinaject), product of Advia Company of Egypt, at dose rate of 0.02 mg kg⁻¹ subcutaneously.

RESULTS

In clinical examination, dullness, listlessness, high heart rate, fever, pale mucosal membranes, brisket edema and edema of the eyelids, nasal and ocular discharge, abortion in pregnant camels and loss of body condition despite a good appetite, terminal nervous signs, including paraplegia, paralysis, delirium and convulsion were observed. Necropsy findings observed, included, emaciated, pale and icteric carcasses, subcutaneous edema and splenomegaly. Microscopic findings included fatty change of the liver, mild hepatitis and mild edema of the lung. No significant macroscopic and microscopic findings were observed in carcasses of aborted fetuses. The parasite was observed in blood smears of 4 camels (Fig. 1). Hematological indices in 4 camels with parasite in blood smear were presented in Table 1. After injection of the Quinapyrmine sulfate (quinaject), the animals were unrest transiently and then became quiet. Blood smears after treatment showed no parasite.

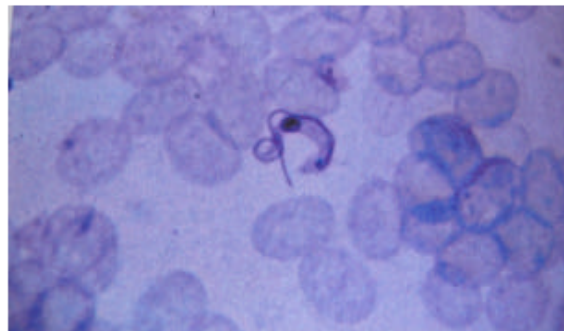


Fig. 1: *Trypanosoma* sp. in blood smear stained with giemsa

Table 1: Hematological indices in 4 camels with parasite in blood smear

Camel No.	Hb (g dL ⁻¹)	PCV (%)	WBC (μ L ⁻¹)	Lym (%)	Neut (%)	Mono (%)	Eos (%)
1	9.9	25	22000	38	43	7	12
2	7.5	25	34000	35	41	2	22
3	7.5	21	29000	62	19	13	6
4	6.0	17	16900	70	21	6	3

DISCUSSION

Here, for the first time, we report an outbreak of trypanosomiasis associated with abortion and neonatal mortality in Iran. Several hematophagous flies can transmit *T. evansi* mechanically, but the most important are the *Tabanus* sp. Transmission is enhanced when camels congregate or are closely herded and when they have high numbers of parasites in their blood (Radostits *et al.*, 2000). In present study because camels congregated when they returned to their stable at night, transmission of the diseases was enhanced, an outbreak was occurred. Clinical signs such as dullness, listlessness, high heart rate, pale mucosal membranes, brisket edema and edema of the eyelids which observed in diseased camels were attributable to anemia which was caused by *trypanosoma* sp. (Zelleke *et al.*, 1989). In addition of acute form of trypanosomiasis, camel may exhibit chronic signs for years. These signs include a reduction in milk yield and capacity for work and a high abortion rate in pregnant females (Schillinger and Rottcher, 1986). The history of the disease in present report indicated that repeated abortions have been occurred in past years. Abortions could be due to chronic form of trypanosomiasis in affected camels. Necropsy findings such as emaciated, pale and icteric carcasses, subcutaneous edema and spleenomegaly could be due to anemia. There are no pathognomonic gross and microscopic lesions (Radostits *et al.*, 2000). Examination of blood smears of 10 affected camels showed that only 4 camels had parasites in their blood smears. The parasite is only seen in blood smear when the fever is present (Rafiee, 1979). Hematological indices including packed cell volume and hemoglobin indicated that affected camels had anemia. Increasing of lymphocytes caused leukocytosis. Lymphocytosis can be occurring following chronic infection in camel (Al-Ani, 2004). In this report presence of chronic infection was confirmed by monocytosis. Animals infected with any pathogenic trypanosome may develop concurrent and even fatal bacterial, viral and other protozoan infections as a result of immunosuppression. Specific parasitic diseases, fungal infection and allergic reactions can lead to Eosinophilia (Al-Ani, 2004). Quinapyramine sulfate is used curatively for treatment of Surra in camels. In this study, all the affected camels recovered after administration of quinapyramine sulfate.

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