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Short Communication

USE OF QUINAPYRAMINE IN THE TREATMENT OF AN OUTBREAK OF *TRYPANOSOMA EVANSI* INFECTION IN CAMEL (*Camelus dromedarius*)

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History, clinical findings, diagnosis and treatment

Four adult dromedary camels (2 male and 2 female; body weight ranging from 560-600kg) were presented for the treatment of recurrent partial anorexia, gradual loss of condition and general listlessness. The other 2 male camels maintained by the same establishment were healthy. Anamnesis indicated that the camels had been intermittently suffering from these symptoms for the last one month. Clinical examination of all 4 camels revealed as elevated body temperature (morning temperature ranged 102 to 103.8°F), accelerated heart rate (36 to 49 beats/min) and respiratory rate (9 to 13/ min), pale anaemic mucous membranes, moderate epiphora, and emaciation associated with a moderate atrophy of hump. Tabanids and *Stomoxys calcitrans* infrequently visited the camels housed in the camel facility. Microscopic examination of wet blood film (OIE, 1992) revealed moderate (n = 2 camels) to astronomical number of motile *trypanosomes* (n = 2 camels). Microscopic examination of thin blood smears and buffy coat smears stained with Dip Quick Stain (Jorgensen Labs. Inc., Loveland, Colorado, USA) also demonstrated trypanosomes (19-21µ x 1.8-2µ) carrying a free flagellum and well developed undulating membrane; morphometric characteristics consistent with those of *Trypanosoma evansi* (Shah-Fischer and Say, 1989; OIE, 1992).

On the basis of characteristic clinical signs (Olaho-Mukani and Mahamat, 2000; Chaudhary and Akbar, 2000) and demonstration of *Trypanosoma evansi* in wet blood films and stained blood smears, a diagnosis of surra was made. Each of the 4 camels was treated by subcutaneous injection of a mixture of Quinapyramine sulphate (1.5g) and Quinapyramine chloride (1.0g) (Try-Ban Powder® 2.5g, Avico, Jordan) dissolved in 20ml distilled water. All 4 treated camels exhibited a slight degree of discomfort lasted for 5-10 minutes following injection. At 12 and 24 hrs post treatment, microscopic examination of wet blood films, stained blood and buffy coat smears for trypanosomes were negative in 3 of the 4 camels treated. All camels tested negative for trypanosomes at 36 hrs post treatment. Cardinal parameters of health (temperature, pulse and respiration rate) gradually returned to normal between 24 to 36 hrs post treatment. All 4 treated camels as well as the 2 unaffected camels remained healthy during post treatment period.

Discussion

A sudden and simultaneous appearance of clinical disease in 4 of the 6 camels was the hallmark of the *Trypanosoma evansi* infection in the present report. The means of transmission and the factors leading to a sudden surge of the surra outbreak in the subjects of present outbreak are open to conjecture. Desquesnes *et al* (2008) described an outbreak of *Trypanosoma evansi* infection in camels in metropolitan France in which transmission by Tabanids and *Stomoxys calcitrans* was speculated. These flies were also involved in the present outbreak as they infrequently visited the camels.

The choice of safe and effective chemo-therapeutic agent(s) to treat trypanosomiasis in camel is often limited by variety of reasons, in particular by toxicity of trypanocidal drugs and development of resistance by the trypanosomes against these drugs (Pathak *et al*, 1997; Chaudhary and Akbar, 2000). Suramin (Naganol^{R}, Bayer) was at one time the most frequently used trypanocidal drug in camel. Widespread resistance among trypanosomes to this drug led to cessation of its production. Idiosyncracy of dromedary camel to diminazene and narrow safety index of this drug precludes the use of this

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cheap trypanocidal drug. Isometamedium chloride (Trypamidium^{R}, Samorin^{R}, Rhone Merieux, France) has low trypanocidal effect against *Trypanosoma evansi* and has a tendency to cause local toxicity characterised by abscessation and cyst formation (Olaho-Mukani and Mahamat, 2000). Melarsomine (Cymerlarsan^{R}, Rhone Merieux, France), although safe and effective in camel trypanosomosis (Nyang'ao *et al*, 1995; Desquesnes *et al*, 2008) is not readily available and is expensive. Quinapyramine sulfate + quinapyramine chloride mixture (Try-Ban^{R}) as used in the present report was effective and bereft of significant side effects. In view of affordable cost and ready availability due to local production in both Pakistan and India, it is tempting to recommend this mixture for the routine treatment of *T. evansi* infection in camel in these countries.

Two of the 6 camels managed by the same establishment tested negative for *T. evansi* infection by the conventional diagnostic methods. These subjects might have also been found positive, had we used more sensitive and accurate surra diagnostic methods like PCR (Chaudhry *et al*, 2008) and latex agglutination test (Olaho-Mukani *et al*, 1996).

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