

AN OUTBREAK OF CAMEL RABIES IN IRAN

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ABSTRACT

Rabies is an acute fatal viral encephalitis that is usually transmitted from animals to man following domestic and wild animal bites. Here, we describe an outbreak of camel rabies in Iran for the first time. Eight camels were attacked by rabid wolves and camels showed signs of rabies. Clinical signs were characterised by increased sensitivity, ferocity, biting faces and lips of other camels, bloat, restlessness, limb paralysis and yawning. Histopathological examination and fluorescent antibody technique (FAT) confirmed rabies infection in the camels.

Key words: Camel, rabies, wild life, wolf

Rabies is a fatal disease for warm-blooded vertebrates, which causes central nervous system infection, paralysis and death (Niezgoda *et al*, 2002). and is caused by a group of neurotropic viruses of *Rhabdoviridae*, *Lyssavirus* genus. It has only one antigenic type and is transmitted from animals to humans by the bite of affected animal (Radostits *et al*, 2007). Camelids are susceptible to rabies (Wernery and Kaaden, 2002) and the disease has been occasionally occurred in Iran. Although the clinical signs of rabies are similar in different animal species, its signs in camels are rarely cited in text books. Sylvatic and urban forms are the 2 features of the disease that appear in extreme and mild degrees of ferocity, respectively (Radostits *et al*, 2007). The latter form is seldom seen in the camel. There is little information about relationship between epidemiology and epizootiology of rabies in camel. Although rabies in dromedaries has supposedly been observed in many African and Asian countries, little has been published on this subject.

Sylvatic and urban forms are 2 different features of rabies and are mainly transmitted by dogs. Most positive cases have been due to dogs and ruminants (Simani, 2003). Rabies is endemic in the wildlife in Iran where infection of domestic livestock is frequent (Esfandiari *et al*, 2010). According to above, management of this problem is one of the most important priorities of Iran's Health Ministry.

The present paper described an outbreak of rabies in a herd of camels which was attacked by rabid wolves.

Materials and Methods

History

In March 2008, in a herd of 90 camels (*Camelus dromedarius*) in Torod region of Semnan province in Iran, some signs of rabies were seen in 8 of these. In early March, the herd was attacked and bitten by 5 rabid wolves. The most bitten sites by wolves were face, lip and eyes of the camels.

Laboratory investigations

Two brain samples were taken from all affected camels soon after death. One portion of each sample was fixed in 10% formalin and the other one was refrigerated and transported fresh on ice to the laboratory.

Impressions of tissue samples from brain stem, hypothalamus, cerebellum, and the hippocampus (Ammon's horns) were examined for rabies infection using FAT. Another portion of brain samples was used for histopathological examination.

FAT and histopathological examination were applied on fresh sample as well as formalin fixed samples as described by WHO & OIE (OIE, 2008 and Dean *et al*, 1996).

Results

Clinical features

In some camels there were also signs of bites on the thighs. After an incubation period of 10-16 days, the clinical signs seen were increased sensitivity, ferocity, biting faces and lips of other

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camels, bloat, restlessness and limb paralysis. In later stage the rabid camels became paralysed and yawned continuously till death (Fig 1) which occurred between 1 to 2 days. All the 8 camels bitten by rabid wolves, died.

The samples of affected animals were positive for rabies. The results of histopathological examination revealed the Negri bodies in the cytoplasm of neurons. In FAT aggregates of nucleocapsid protein were seen by specific fluorescence of bound conjugate.

Discussion

Wolves are extremely susceptible to rabies (Radostits *et al*, 2007). Studies of reservoirs of rabies in different parts of Iran exhibit that dog, fox and jackal are the most common reservoirs of the disease in northern areas, although wolf as predominant one in western and northwestern parts (Simani, 2003).

There are scarce reports about camel rabies in Iran possibly due to the poor reporting of camel owners. The species of animals most likely to be infected with rabies vary from region to region. In the Caspian littoral, jackals and stray dogs are the most important rabid animals, while, in the mountainous areas of the central plateau, foxes and wolves play a more important role (Bokaei *et al*, 2009). According to Simani's study in Iran, only one case of 350 positive



Fig 1. Yawning in rabid camel.

samples was camel (Simani, 2003). In a study of rabies by Bokaei *et al* (2009) in Caspian Sea littoral provinces during 1996-2006, 3 rabid camels were seen in Golestan province. In this study, the frequency of attacker animals among confirmed cases were 83% dog, 58.3% wolves and 17% fox (Bokaei *et al*, 2009).

In another report on animal rabies in Kerman province during 1993-2003, there was a significant seasonal variation in the number of suspected and confirmed rabid animals and the peaks were in winter and autumn. The frequency of rabies in camel was 1.33% and the amount of bites due to wolves was only 1% (Rezaeinasab *et al*, 2007).

It is possible that the disease spreads among the camels by biting of rabid camels. The aggression of the rabid camel made it a danger to other camels and to people in contact.

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