A note on FMD in Mithun (*Bos frontalis*) and Black buck (*Antelope cervicapra*)

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Foot-and-mouth disease (FMD) is a highly contagious and sometimes fatal viral disease of cloven-hoofed animals, including domestic animals such as cattle, water buffalo, sheep, goats and pigs, as well as antelope, bison and other wild bovids, and deer. In addition, hedgehogs (McLauchlan and Henderson, 1947) and elephants are susceptible to the disease. The llama and alpaca may develop mild symptoms but are resistant to the disease and will not pass it on to others of the same species. In laboratory experiments, mice, rats and chicken have been successfully infected by artificial means, but it is not believed that they would contract the disease under natural conditions. All these animals may be responsible for the spread of the disease. It is caused by foot-and-mouth disease virus which is a prototypic member of the Aphthovirus genus in the Picornaviridae family. The members of this family are small (25-30 nm), nonenveloped icosahedral viruses that contain single-stranded RNA.

The disease is characterised by high fever that declines rapidly after two or three days; blisters inside the mouth that lead to excessive secretion of stringy or foamy saliva and blisters on the feet that may rupture and cause lesions leading to lameness. Adult animals may suffer weight loss from which they do not recover for several months as well as swelling in the testicles of mature males, and in females, milk production can decline significantly. Though most animals eventually recover from FMD, the disease can lead to myocarditis and death, especially in newborn animals. Some infected animals remain asymptomatic, but they nonetheless carry FMD and can transmit it to others.

There are several reports on the occurrence of the disease in wild and semi domesticated animals in India. In India the disease is seen mainly in mithun, yak, elephant, sambar deer, barking deer and wild buffaloes. The disease in wild animals has been reported frequently from north eastern states. The disease was also reported from Thiruvantahapuram Zoo, Kerala affecting captive Mithun, black buck and caped buffaloe in 2007. The present communication describes the occurrence of FMD in captive mithun and black buck in the State of Karnataka, South India.

The disease was reported from Bannerghatta Biological Park, Bangalore, India. On the information from zoo officials a team of scientists from Institute of Animal Health and Veterinary Biologicals, Hebbal, Bangalore proceeded on for scientific investigation. On examination it was found that these animals, two Mithun and one black buck appeared to be dull, having a temperature of 104^0 C. Oral ulcers were observed. Dryness with hyperemic upper dental gingiva was seen. Small wounds were found on the interdigital space of the black bucks. Later the animals succumbed to the infection. On post mortem examination oral lesions, subcutaneous hemorrhages, epicardial, endocardial and myocardial hemorrhages, petechial hemorrhages on the kidney were observed in mithun whereas in black bucks oral ulcers and haemorrhagic streaks were seen in the intestinal epithelium. Spleen, lymph nodes, kidney, heart, tongue epithelium and intestinal epithelium were collected for further laboratory examination. Typing the samples collected revealed FMD serotype 'O' when tested by sandwich ELISA. Several outbreaks of FMD in Mithun have been reported earlier. A total of 6239 Mithuns belonging to 57 villages were affected in a span of nine months in Arunachal Pradesh during 1994-1995. Among that 818 animals succumbeed during the course of the disease (Verma and Sarma, 1997). Twenty three outbreaks of FMD in the northeastern states of India for 14 years (1974 to 1997) were also reported by Barman et al (1999). The outbreaks were recorded in 7 different species of wild and semi-domesticated animals. The highest number of outbreaks was recorded in mithun, followed by yak and elephant. The disease was recorded in sambar deer, spotted and barking deer and also in wild buffaloes. In the present study serotype O was confirmed in the outbreak of mithun and black buck. FMD virus type Asia 1 was identified to be the cause of the outbreaks involving mithun in Arunachal Pradesh by Verma and Sarma, 1997. FMD virus types O, A, A_{22} and Asia 1 were reported to be the cause of outbreak in wild animals by Barman et al (1999). Since the Bannerghatta Biological park had wide range of wild herbivores strict containment and biosecurity measures were adviced for the containment of the disease.

References

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