



RESEARCH ARTICLE

UNUSUAL CASE OF FOOT AND MOUTH DISEASE IN A RAM (*OVIS ARIES*) IN PAKISTAN AND EVALUATION OF SYMPTOMATIC AND SUPPORTIVE THERAPY

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ABSTRACT

Foot and mouth disease is an infectious highly contagious viral disease of cloven-footed animals with almost 100% morbidity leading to heavy economic losses in terms of decreased production, long convalescence period and mortality in young ones. The pathogen belongs to genus *Aphthovirus* containing RNA as genetic material. There is no specific treatment available for the ailment. However, timely start of the symptomatic and supportive treatment will lead to increased survival and rapid return to normal production in lactating animals. In this report, an unusual case of FMD in a one year old ram is documented and response to symptomatic and supportive therapy has been evaluated. The findings obtained suggested that prevention from secondary bacterial infection, immune-stimulation and supportive therapy lead to early recovery from the clinical disease. Although, supportive treatment plan costs a lot to the farmer, thus attention must be focused on prophylactic vaccination strategies, autohemotherapy and antisera administration.

Key words: Cloven-footed animals, FMD, Immunostimulants, Sheep, Symptomatic Treatment, Vaccination

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INTRODUCTION

Foot and Mouth Disease (FMD) is an infectious and highly contagious disease affecting cloven-footed animals including cattle, buffalo, sheep, goat and wild ruminants (Pacheco *et al.* 2005). Etiological agent is positive sense foot-and-mouth disease virus (FMDV) having RNA as its genetic material and its genus is *Aphthovirus* belonging to family Picornaviridae (Ryan *et al.* 2008). Pathogen has seven different serotypes but in Pakistan O, A and Asia-1 serotypes are more prevalent (Asadullah *et al.* 2014). Morbidity and mortality in the affected population depends upon the serotype, virulence factors of the virus, species and age of the affected animal (Orsel *et al.* 2005). This ailment has been eradicated from many of the advanced countries but it is still present in advancing countries. Disease causes substantial economic setbacks in terms of as serving as a major animal trade barrier, dropped milk production and poor fertility rates. However, mortality rate may reach only up to 5% depending upon host age, immune status, species and strain of the virus (Martinez-Lopez *et al.* 2010).

Disease is also of zoonotic significance as humans can get the infection while dealing with the animals and the disease is characterized by fever, mild headache, malaise, oral dryness, muscle pain, and a tingling, burning sensation of fingers, palms, and feet prior to vesicle formation (Star and Frydenberg, 2003). Transmission of viral particle from an infected animal to the healthier one is mainly through aerosol ways and direct contact. Virus has highly variable incubation period ranging from 2 to 15 days. Main clinical manifestations include elevated body temperature due to viremia, partial or complete anorexia due to oral vesicles and lameness as a result of formation of vesicles in the inter-digital spaces. Vesicles may rupture and in most of the cases sloughing of epithelium occurs. Pregnant animal may abort and lesions on udder and teat of the female patient can also appear paving the way for mastitis (Kitching and Hughes, 2002). Differential diagnosis of the disease includes vesicular stomatitis, bluetongue, contagious ecthyma, bovine viral diarrhea and vesicular exanthema. There is not specific treatment protocol for the disease however supportive and symptomatic therapy warrants survival of the host. 2% sodium hydroxide, 4% sodium carbonate and 5.25% sodium hypochlorite have been found most effective to destroy the pathogen in the environment. Virus is susceptible to alkaline cleaners and acidic ethanol solutions (Harada *et al.* 2015).

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MATERIALS AND METHODS

A 1 year old Kajli breed ram was presented to the Outdoor Patient Department (OPD) of Department of Clinical Medicine and Surgery, University of Agriculture, Faisalabad, Pakistan with the main presenting complaint of being off-fed since last day and lameness. Thorough clinical examination was done and main findings included elevated body temperature (106.2 F), vesicular and erosive lesions on the tongue accompanied with sloughing epithelium and inflammation of the coronary band. Profuse salivation and reluctance to walk was shown by the patient. Hydration status was found to normal and no other abnormality was found. Based on the history and clinical signs, the case was diagnosed as FMD and the supportive and symptomatic treatment plan was devised. Amoxicillin trihydrate (AMOXYGENT®), flunixin meglumine (LOXIN®), pheneramine male ate (ANTIL®) were administered at the dose rate 11mg/kg, 1.1mg/kg, and 4mg/kg, respectively to prevent secondary bacterial infections, bring down the body temperature to the normal and to decrease irritation, respectively (Radostits *et al.* 2005). Supportive care plan consisted of electrolyte infusion (RINGER LACTATE®) to restore the electrolytes being lost as a result of hyper salivation. Vitamin B-complex (VITABION®) was also added to the infusion. Vitamin E and selenium preparation (SELFEROL®) was administered intramuscularly as it has immunostimulatory effect and boost up regeneration of lost epithelium (Oliver and Barbul, 2014). The owner was also asked to apply mixture of crushed jaggery, honey and butter in the oral cavity that will give soothing effects and energy to the animal. Hoof care involved dipping of the hooves in 2% copper sulfate solution as it possesses antiseptic properties (Thomsen, 2015).



Figure 1. Vesicle formation on the tongue and sloughing of epithelium

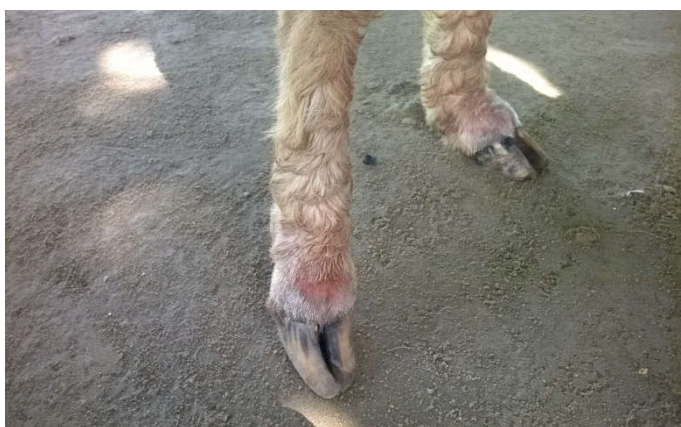


Figure 2. Coronitis leading to reluctance to walk

RESULTS AND DISCUSSION

The entire treatment protocol was continued for 5 days and signs of recovery started to appear on 3rd day. For both the small and large herd holder, this entire treatment plan leads to economic burden on the farmer because of high cost of supportive therapies. Due to viral nature of the disease, the proverb “prevention is better than cure” fits best to decrease the losses caused by this disease. Vaccines are widely used across the globe as prophylactic measures; however, knowledge about the circulating serotype is essential to have good and long-term results (Radostitis *et al.* 2005). In Pakistan, serotype O, A and Asia-1 are more prevalent. Thus vaccination schedule must include the brand having all of these three serotypes. Mass scale vaccination protocols have been adopted throughout the world to stop the incidence of the disease and choice of the vaccine is dependent on the circulating serotype in the area. If the disease is reported at a farm, the blood from animals which have recovered from the disease should be collected for serum harvesting and injected subcutaneously in all of the healthy animals as another prophylactic protocol (Naranjo and Cosivi, 2013). FMD antisera are also available commercially that contains ready-made antibodies against the virus and choice of the sera must be in accordance with the circulating serotypes. Once the case is reported, animal must be given antisera for rapid neutralization of virus and early recover from this malady (Ferris, 1987). Due to cross boundary transmission of the disease, international efforts are required to curtail the spread and recurrence of disease. Principals laid down by West Eurasia Regional Roadmap for FMD control should be adopted by all the countries for eradication of the disease (Jamal and Belsham, 2013).

Conclusion

FMD is an infectious highly contagious disease with almost 100% morbidity rate leading to heavy economic setbacks. There is no specific treatment for the disease. However, symptomatic and supportive therapy is mostly adopted that costs a lot. In order to reduce the incidence of the disease, vaccination against the circulating serotypes is highly warranted.

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