CLINICAL ARTICLE

AN OUTBREAK OF FOOT AND MOUTH DISEASE IN A HERD OF CROSSBRED CATTLE

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ABSTRACT

During the months of December 2001 and January 2002, an outbreak of Foot and Mouth disease (Foot and Mouth Disease type-A virus) was recorded in a crossbred dairy herd at Livestock Experiment Station, Qadirabad. The sick animals showed only the oral lesions except one, which developed foot lesions after 10 days. The overall morbidity rate was 52.13% while the same was recorded as 7.95, 14.06, 97.36, 80.14, 62.68, 62.68, 62.50, and 7.14% in milking cows, dry cows, male young stock, female young stock, male sucklers, female sucklers and bullocks, respectively. Recovery was noticed on seventh day from the onset of out break. No mortality was recorded.

Key words. Foot and Mouth disease, crossbred cattle, morbidity, lesions.

INTRODUCTION

Crossbreeding of native cattle with the exotic dairy breeds is being practiced in Pakistan to increase the milk production. However, crossbred cattle are more prone to infectious/contagious diseases, which adversely affect the production performance of these animals. The losses thus sustained are either due to mortality or drop in production for varying periods of time. In Foot and Mouth disease (FMD), fatalities are un-common in adults but the affected animals seldom return to their normal production performance resulting in continuous losses throughout the life span of the animals (Kazmi and Shah, 1981). The sucklers which suckle milk from FMD infected animals, have been reported to suffer from heavy mortality. The virus is passed in the milk and even flash pasteurization procedures do not inactivate FMD virus in milk (Radostits *et al.*, 2000). The present report describes an outbreak of FMD in a herd of crossbred cattle at the Livestock Experiment Station, Qadirabad, Sahiwal.

OUT-BREAK

In a herd of 468 heads of crossbred cattle maintained at the Livestock Experiment Station (LES), Qadirabad, on the first day i.e. 30-12-2001, seven female young stock (FYS) and one male suckler (MS) were found suffering from oral lesions suggestive of FMD. The affected animals showed fever, anorexia, salivation, vesicles on gums, and erosions on the dorsum of tongue. No foot lesions were recorded except in one female young stock. The temporal pattern of occurrence of the disease in the herd has been detailed in Table 1.

Laboratory analysis

A team of scientists from the Veterinary Research Institute (VRI), Lahore was requested to collect the samples from oral lesions for diagnosis. The VRI diagnostic laboratory using complement fixation test declared it as Foot and Mouth disease type "A" virus.

Treatment/control measures

The affected animals were immediately separated from the rest of the herd and any new case observed was also shifted to sick line.

Animals irrespective of age and sex were inoculated with Amoxicillin = 1ml/ 10kg body weight (Amoxicillin tritydrate 150 mg) and Novasul = 20-40 ml (Phenyldimethyl–Pyrazolonmethyl animo methan sulphate 50%). Mouth wash with Gentian violet =1 part and Glycerine = 100 parts was also given to each animal.

Though there were no foot lesions even then foot bath was provided to all the sick and healthy animals twice daily using Phenyl + Formalin + Copper Sulphate (2% each).

Apparently, healthy animals (n=381) were vaccinated on 4.1.2002, whereas the animals which were showing lesions (n=87) were injected FMD serum in sddition to the above-referred medicinal treatment. From 5th January 2002 onward the animals showing lesions/symptoms were carried with the above referred treatment and were also injected FMD serum at the rate of 60 c.c. per animal S.C. (Table 2). The medicinal treatment was carried out for 3 days, however, mouth wash and foot dip was continued up to 5 days even after complete

Table 1. Incidence of foot and mouth disease in a crossbred cattle herd

Class	Date wise disease occurrence											
	31-12-2001	1-1-2002	2-1-2002	3-1-2002	4-1-2002	5-1-2002	6-1-2002	7-1-2002	8-1-2002	9-1-2002	10-1-2002	11-1-2002
Bullock	-	-	-	-	-	-	-	-	-	-	1	-
Cows (wet)	-	-	-	-	4	1	-	2	-	-	-	-
Cows (dry)	-	1	-	1	4	-	3	-	-	-	-	-
MYS	-	1	2	5	2	-	1	1	1	4	20	-
FYS	7	8	3	17	8	16	27	19	3	5	1	-
MS	1	1	1	8	6	13	4	7	-	-	-	-
FS	-	-	-	1	6	10	11	7	-	-	-	-
Total	8	11	6	32	30	40	46	36	4	9	22	-
Cumulative total	8	19	25	57	87	127	173	209	213	222	244	244

FYS= Female young stock, MYS= Male young stock, FS= Female sucklers, MS= Male sucklers

Table 2. Serum inoculation to animals affected by foot and mouth disease

Class	Date wise disease occurrence			
	4-1-2001	5-1-2002	6-1-2002	7-1-2002
Bullock	-	-	-	-
Cows (wet)	4	1	-	2
Cows (dry)	6	-	3	-
MYS	10	-	1	1
FYS	43	16	27	19
MS	7	13	4	7
FS	7	10	11	7
Total	87	40	46	36
Cumulative total	87	127	173	209

Table 3. Morbidity rate of foot and mouth disease in various groups of animals in a crossbred cattle herd

Class	No. affected	Total	Percentage
Bullock	1	14	7.14
Cows (in milk)	7	88	7.95
Cows (dry)	9	64	14.06
MYS	37	38	97.36
FYS	113	141	80.14
MS	42	67	62.68
FS	35	56	62.50
Total	224	468	52.13

Table 4. Sex-based incidence of foot and mouth disease in a crossbred cattle herd

Class	Total	Affected	Percentage
Males	119	80	67.22
Females	349	164	46.99
Total	468	244	52.13

recovery. In the animals developing signs on January, 8th, 9th and 10th, the lesions were mild. Therefore, serum was not injected, only medicinal treatment was instituted. All the sucklers were fed milk only after boiling and then bringing to normal body temperature.

Table 5. Age-based incidence of foot and mouth disease in a crossbred cattle herd

Class	Total	Affected	Percentage
Adult	166	17	10.24
Young	179	150	83.79
Suckler	123	77	62.60
Total	468	244	52.13

DISCUSSION

The morbidity rate was highest (97.36%) in male young stock and lowest (7.14%) in bullocks (Table-3). The sex-based incidence was higher (67.22%) in males than in females (46.99%, Table 4). In the present outbreak of FMD, only oral lesions were observed in all but one FYS, which developed foot lesions also. The morbidity rate was lowest in adult cows (Table-5) One reason could by that these animals suffered from FMD three years back at Bahadurnagar and later on were shifted to Qadirabed. In the literature, it has been documented that after natural out break of foot and mouth disease, the animals become resistant to the re-attack by the same virus type for about 3-4 years (Blood *et al.*, 1983).

There are varying reports regarding the morbidity rates of FMD. Fahrang (1972) has opined that morbidity rate may approach 100%, while Kazmi and Shah (1981) recorded it to be 79.07%. Sharma and Hazarika (1996) stated that the prevalence of affected animals in an outbreak varied from 45 to 100%. The susceptibility amongst natural hosts is influenced by age and nutritional status. Young and well fed animals are more susceptible than the adult or under nourished animals. Apparent variations of infectivity and pathogenicity of any one strain of virus are more likely due to host factors than to variation in the organisms.

The foot and mouth disease control programme requires three times vaccination in a year (Blood *et al.*, 1983). The short duration of immunity produced by the vaccine has also been suggested by Sharma and Hazarika (1996), as they recorded outbreak three months after

vaccination. Use of oil-based vaccine has logistical and immunological advantages over other vaccines (Hunter *et al.*, 1998). A constant epidemiological surveillance is indicated to maintain the efficacy of such vaccines in the field (Maan *et al.* 1998). The herd at Qadirabad used to be vaccinated biannually instead of 3 times a year; the biannual vaccination programme has proved ineffective in other countries as well (Dawe *et al.*, 1994) in preventing the FMD out breaks in cattle. The signs and symptoms recorded in the present out break resembled to those recorded by El-Danaf *et al.* (1990) except for the foot lesions which were not recorded in the current out break of FMD.

REFERENCES

Blood, D.C., O.M. Radostits and J.A. Handerson, 1983. Veterinary Medicine 6th Ed. Bailliere Tindall, London. pp-734-736.

Dawe, P.S., F.O. Flanagan, R.L. Madekurozwa, K.J. Sorensen, E.L. Anderson, C.M. Foggin, N.P. Foggin, N.P. Ferris and N. J. Knowles, 1994. Natural transmission of foot and mouth disease virus from African buffaloes to cattle in wildlife area of Zimbabwe. Vet. Rec., 134(10): 230-232.

El-Danaf, N. A., A. A. Nagi, M. A. M. Hafiz, M. H. M. Shaker and A.M. Tawfik, 1990. Clinical and pathological studies on foot and mouth disease in buffaloes. Assiut. Vet. Med. J., 22(4): 80-87.

Fahrang, F.M., 1972. Situation of foot and mouth disease in Iran during the past 10 years. Bull. Int. Epiz., 77: 581-586.

Hunter, P., 1998. Vaccination as a mean of control of foot and mouth disease in Sub-Saharan Africa. Vaccine, 16(2-3): 261-264.

Kazmi, S.E. and S.K. Shah, 1981. Effect of foot and mouth disease on production performance in crossbred cattle. J. Anim. Sci. Pakistan, 3(1-2): 41-48.

Mann, S., K. Arvind, R. Sharma and K.L. Ahuja, 1998. Prevalence of foot and mouth disease virus types in North-West India. Indian J. Virology, 14(1): 55-57.

Radostits, O.M., C.C. Gay, D.C. Blood and K.W. Hinchcliff, 2000. Veterinary Medicine, 9th Ed. W.B. Saunders Company, London, pp. 1059-1060.

Sharma, D.K. and A.K. Hazarika, 1996. Foot and mouth disease in organized cattle farms of the N.E. States of India. J. Assam. Vet. Council, 6: 51-52.