

## Short Communication

# Some Epidemiological Aspects of Foot and Mouth Disease Outbreak in Lahore (Pakistan)

A.G. KHAN, M.A. KHAN<sup>1</sup>, M. YOUNUS, I. KHAN AND T. ABBAS

Department of Preventive Medicine and Public Health, University of Veterinary and Animal Sciences, Lahore

<sup>1</sup>Corresponding author's e-mail: [drkhan\\_uaf@yahoo.com](mailto:drkhan_uaf@yahoo.com)

## ABSTRACT

After an outbreak of a vesicular disease in cattle and buffaloes, a denominator based active surveillance was conducted in all the four affected villages located in the border area of Pakistan and India in Lahore district. The total number of animals kept by the farmers (n = 1537) were clinically examined individually and recorded on a Performa. Epidemiological investigations revealed that morbidity rate was higher in adult than in young animals. The morbidity rate was 22.39% in young buffaloes, 43.01% in adult buffaloes. Morbidity rate in young cattle was 16.11% but in case of adult cattle it was 32.23%. The mortality rate was 12.66% in young buffaloes, which was lower (15.36%) than that in adult buffaloes. Mortality rate in young cattle was 6.19%, while it was 9.09% in adult cattle. Case fatality rate was observed higher in buffaloes than in cattle. Frequency of clinical signs observed was found as depression (63.30%), mucosa diffusely red (61.87%), anorectic (61.48%), muzzle hyperemic encrusted (61.09%), erosions (58.49%), laminitis (56.37%), temperature 101 - 105 F<sup>0</sup> (54.26%), drooling of saliva (53.35%), shivering (44.82%), mastitis (38.51%), temperature 101 - 103 F<sup>0</sup> (4.35%), temperature 105 - 107 F<sup>0</sup> (6.18%), polypnea (5.79%), cough (3.38%), diarrhea (2.40%), subnormal temperature (0.71%) and abortion (0.65 %).

**Key Words:** Seroepidemiology; Foot and mouth disease; Pakistan

## INTRODUCTION

Foot and mouth disease (FMD) is an acute, highly communicable infection of the cloven footed, domesticated and wild animals. The disease is associated with the formation of vesicles in the mouth, teats and feet. The integrated epidemiological and economic models are effective tools to gain a more accurate insight into the future benefits of FMD control and eradication in the region (Perry *et al.*, 1999). This paper reports some epidemiological aspects of FMD recorded in an outbreak in the vicinity of Lahore (Pakistan).

## MATERIALS AND METHODS

Denominator based active surveillance was conducted in the four villages affected with an outbreak of FMD around the border area of district Lahore. All the homesteads were visited door to door. The total number of animals of various species kept by the farmers and the affected animals by age, sex and species were enquired from the farmers and recorded on questionnaire proforma. The clinical signs of the affected animals and their sequence were recorded. Each questionnaire was meant for one house-hold only. Different auction markets of livestock and fairs were visited in and around the affected area in terms of price of livestock at various age groups and different sexes to evaluate the economic losses in the affected area during the said outbreak.

## RESULT AND DISCUSSION

Results are presented in Tables I and II. Young animals of the species were more susceptible than adults. In case of young buffaloes morbidity rate was 22.39% (n = 290) of total 1295 young and adult buffaloes, while in case of adult buffaloes morbidity rate was 43.01% (n = 557). Morbidity rate in young cattle was 16.11% (n = 39) of total number of 242 young cattle but in case of adult cattle it was 32.23% (n = 78). Mortality rate in young buffaloes 12.66% (n = 164) was lower than adult buffaloes which was 15.36% (n = 199) of 1295 young and adult buffaloes. Case fatality rate was observed higher in buffaloes. The proportionate morbidity, mortality and case fatality rates in young and adult buffaloes and cattle during an outbreak of FMD are shown in Table I.

**Buffalo.** An incidence (morbidity) rate among 418 young buffaloes (less than or equal to 24 months of age) was higher than adult buffaloes (equal to 25 months & above). The mortality rate in young buffaloes (less than or equal to 24 months of age) was higher than in adult buffaloes (equal to 25 months & above). The case fatality rate for young buffaloes was higher than adult buffaloes. The comparison of morbidity, mortality and case fatality rate on the basis of age group is shown in Table II.

**Cattle.** Among the total population of young cattle (n = 77), morbidity, mortality and case fatality rates were higher than in adult cattle (n = 165) as shown in Table II.

**Table I. Proportionate morbidity, mortality and case fatality rates in young and old buffaloes and cattle of the effected**

Sr. No	Vital Statistics	Buffalo		Cattle	
		Young Number (%)	Adults Number (%)	Young Number (%)	Adults Number (%)
1	Morbidity rate	290(22.39)	557(43.01)	39(16.11)	78(32.23)
2	Mortality rate	164(12.66)	199(15.36)	15(6.19)	22(9.09)
3	Case Fatality rate	56.55%	35.72%	38.46%	28.20%

temperature (0.71%) and abortion(0.65%). These finding are partially in accordance with Sharma *et al.* (1984). Heavy economic losses had to face during the out break. The economic losses due to FMD out break were recorded Rs. 5.286 million both in cattle and buffaloes.

The common sources of the most recent out break were the introduction of infected cattle and buffalo from a public market or surrounding villages (25 of 60 cases), and commingling of cattle and buffalo with those of an infected neighbouring village (24/ 60) (Cleland *et al.*, 1995).

**Table II. Morbidity, mortality and case fatality rate of foot and mouth disease in cattle and buffaloes according to their age in the border area of Lahore**

All Villages	Type of affected animals	Age Group	*Population	Morbidity No. (%)	Mortality No. (%)	Case Fatality Rate
Ram Pura	Cattle	Young	32	22 (28.57)	6 (7.79)	27.27
		Adult	62	41 (24.85)	6 (3.64)	14.63
	Buffalo	Young	154	103 (24.4)	34 (8.13)	33.01
		Adult	307	202 (23.03)	28 (3.16)	13.86
Ram Pura Khurd	Cattle	Young	3	2 (2.60)	1 (1.30)	50.00
		Adult	5	3 (1.82)	0 (0.00)	0.00
	Buffalo	Young	86	50 (11.96)	24 (5.74)	48.00
		Adult	181	101 (11.52)	26 (2.93)	25.74
Pathan Ke	Cattle	Young	26	9 (11.69)	5 (6.49)	55.56
		Adult	65	19 (11.52)	12 (7.27)	63.16
	Buffalo	Young	124	100 (23.92)	74 (17.70)	74.00
		Adult	249	164 (18.70)	94 (10.60)	57.32
Serjah Merjah	Cattle	Young	16	6 (7.79)	3 (3.90)	50.00
		Adult	33	15 (9.09)	4 (2.42)	26.67
	Buffalo	Young	54	37 (8.85)	32 (7.66)	86.49
		Adult	140	90 (10.26)	51 (5.75)	56.67
Total			1537	964 (62.71)	400 (26.02)	41.49

\*Population

The morbidity rate was higher in buffaloes than cattle. The present study is in accordance with the study of Dutta *et al.* (1983). The reason behind may be that the cattle population kept in the area belonged to Sahiwal breed (local breed), which is bit resistant to foot and mouth disease. Young animals of both the species (Buffalo & cattle) were found more susceptible than adults and it is in accordance with the findings of Sharma *et al.* (1981) and Perry *et al.* (2002). The mortality in calves was due to cardiac involvement and frequent deaths occurred due to acute heart failure.

Frequency of clinical signs was observed and found it as depression (63.30%), mucosa diffusely red (61.87%), anorectic (61.48%), muzzle hyperemic encrusted (61.09%), erosions (58.49%), laminitis (56.37%), temperature 101 – 105 F<sup>0</sup> (54.26%), drooling of saliva (53.35%), shivering (44.82%), mastitis (38.51%), temperature 101 – 103 F<sup>0</sup> (4.35%), temperature 105 - 107 F (6.18%), polypnea (5.79%), cough (3.38%), diarrhea (2.40%), subnormal

## REFERENCES

- Cleland, P.C., P. Chamnanpood, F.C. Baldock and L.J. Gleeson, 1995. Questionnaire survey of foot and mouth disease (FMD) and of FMD control by vaccination in villages in northern Thailand *Rev. Sci. Tech.*, 14: 567–75
- Duta, P.K., G. Sharma and S.K. Das, 1983. FMD in Indian Buffaloes. *Vet. Rec.*, 11: 134
- Perry, B.D., L.J. Gleeson, S. Khounsey, P. Bounma and S.D. Blacksell, 2002. The dynamics and impact of foot and mouth disease in small-holder farming systems in South-East Asia: a case study in Laos. *Rev. Sci. Tech.*, 21: 663–73
- Perry, B.D., W. Kalpravidh, P.G. Coleman, H.S. Horst, J.J. McDermott, T.F. Randolph and L.J. Gleeson, 1999. The economic impact of foot and mouth disease and its control in South-East Asia: a preliminary assessment with special reference to Thailand. *Rev. Sci. Tech.*, 18: 478–97
- Sharma, M.C., M.N. Pathak, M.N. Hung, D.L. Nhi and N.V. Vuc, 1984. Report on the out break of foot and mouth disease in Murrah buffaloes reared in the southern part of Vietnam. *Veterinary viral diseases*: 302–3

(Received 20 August 2005; Accepted 12 December 2005)