

SUBCLINICAL MASTITIS IN BUFFALOES IN ATTOCK DISTRICT OF PUNJAB (PAKISTAN)

H. A. Bachaya, Z. Iqbal¹, G. Muhammad², A. Yousaf² and H. M. Ali³

District Diagnostic Laboratory, Livestock and Dairy Development Department, Attock.

¹*Department of Veterinary Parasitology, ²Department of Clinical Medicine and Surgery,*

³*Department of Veterinary Anatomy, University of Agriculture, Faisalabad, Pakistan*

ABSTRACT

Mastitis is the most costly disease of dairy industry throughout the world. Sub-clinical mastitis is not observed by the farmers but results in hidden losses in terms of production. The present study was conducted to determine the quarter wise and animal wise prevalence of sub-clinical mastitis in buffaloes in Attock district of Punjab, Pakistan. Milk samples were collected from apparently mastitis free 1200 quarters of 300 buffaloes. The samples were subjected to Surf Field Mastitis Test (SFMT). The overall quarter wise prevalence was 58.75 percent, while animal wise prevalence was 77.98 percent. The maximum quarter wise prevalence was found to be 16.66 percent in Tehsil Jand, followed by 13.33, 11.67 and 13.33 percent in the tehsils Attock, Pindighaib, and Fateh Jang, respectively. The maximum animal wise prevalence was 82.61 percent in Tehsil Pindighaib, followed by 73.33, 80.00 and 76.00 percent in the tehsils Attock, Jand and Fateh Jang, respectively.

Key words: Sub-clinical mastitis, buffaloes, Surf Field Mastitis Test, Attock.

INTRODUCTION

Mastitis is the inflammation of mammary glands with physical, chemical and microbiological changes characterized by an increase in somatic cells, especially leukocytes, in the milk and by the pathological changes in the mammary tissue. Mastitis is recognized as the most important and costly disease of dairy animals (Lightner *et al.*, 1988; Ali *et al.*, 1989). Apart from causing colossal economic losses, this disease also poses the risk for the transmission of zoonotic diseases like tuberculosis, brucellosis, leptospirosis and streptococcal sore throat to human beings (Radostits *et al.*, 2000). Various forms of clinical and sub clinical mastitis occur in bovine.

In the clinical mastitis all the five cardinal signs of udder inflammation (redness, heat, swelling, pain and loss of milk production) are present, while the sub-clinical form is bereft of any obvious manifestation of inflammation. Sub-clinical mastitis is 3-40 times more common than the clinical mastitis and causes the greatest overall losses in most dairy herds (Schultz *et al.*, 1978). In the United States, sub-clinical mastitis is responsible for 60-70 percent of total economic losses associated with all mastitic infections (Merrill and Galton, 1989). These losses may even be higher in Pakistan because mastitis prevention practices like teat

dipping and dry period antibiotic therapy are not in vogue. Since there is no gross swelling of quarters or abnormality of milk, sub-clinical mastitis is recognized by laboratory examination of milk or by animal-side tests. The common farmers are not so much familiar with these techniques. So the present study was conducted to determine the quarter wise and animal wise prevalence of sub-clinical mastitis in buffaloes in Attock district of Punjab, Pakistan, using an easy animal-side test viz. Surf Field Mastitis Test.

MATERIALS AND METHODS

Milk samples from apparently mastitis free 1200 quarters of 300 buffaloes were collected. The samples were subjected to Surf Field Mastitis Test (SFMT). For this purpose, 3 percent Surf solution was prepared by adding three grams of commonly used detergent powder (Surf Excell[®], Lever Brothers, Pakistan) in 100 mL of water. Quarter milk samples and surf solution were then mixed in equal quantities in petri dishes separately for each quarter. The formation of gel indicated positive mastitis samples. The gel formation was graded into four categories from lower to higher intensity as +, ++, +++ and +++, respectively (Muhammad *et al.*, 1995).

RESULTS AND DISCUSSION

Quarter wise and animal wise prevalence of sub-clinical mastitis in buffaloes in Attock District of Punjab has been shown in Tables 1 and 2, respectively. The quarter wise prevalence was found to be 58.75 percent, while animal wise prevalence was 77.98 percent. A previous study has shown quarter wise and animal wise prevalence of mastitis as 64 and 30.5

differences in management practices, methods of detection, breeds of the animals, immune response of animals and climatic conditions.

Attock district of Punjab is included in Barani area where fodder deficiency is a major problem. Extreme weather favours the problem and creates stress to the body, hence immunity decreases, leading to increased sub-clinical incidence associated with contagious and environmental mastitogens. Owing to these reasons, sub-clinical mastitis prevalence was high in this area as

Table 1: Quarter wise prevalence of sub-clinical mastitis in buffaloes in 4 tehsils of District Attock

Area	Total quarters tested	Affected quarters		One positive quarter		Two positive quarters	
		No.	%age	No.	%age	No.	%age
Attock	300	155	51.66	115	38.33	40	13.33
Jand	300	200	66.66	150	50	50	16.66
Pindighaib	300	180	60	145	48.33	35	11.67
Fateh Jang	300	170	56.66	130	43.33	40	13.33

Average affected quarters = 58.75 %

percent, respectively in buffaloes (Fazal-ur-Rehman, 1995). Herd-mate animals had shown higher prevalence of sub-clinical mastitis in buffaloes i.e.75 percent versus 44.44 percent in individually managed animals. Said and Abd-el-Malik (1968) reported a prevalence of 38.07 percent in buffaloes on the basis of Whiteside test and California Mastitis Test (CMT). Hashmi and Muneer (1981) used cultural examination and reported a figure of 44.9 percent for buffaloes. Rehman *et al.* (1983) reported, on the basis of direct, indirect and cultural examination, a prevalence of 59.2 and 36.8 percent of sub-clinical mastitis in cows and buffaloes, respectively. Hussain *et al.* (1984) documented a prevalence of 33 percent in cows and 8 percent in buffaloes on the basis of results of Whiteside test. Shah (1987) used Ciba-Geigy Mastitis test and found that 34.48 percent buffaloes suffered from sub-clinical mastitis. Anwar and Chaudhry (1983) reported a prevalence of 47.5 percent in buffaloes after using Strip Cup test, pH test and Whiteside test. The difference in prevalence of sub-clinical mastitis observed in the present and the previous studies may be due to

compared to previous studies conducted in other areas of the country.

The milk samples from udder quarters affected with sub-clinical mastitis showed floccules or gel formation when subjected to SFMT. In a previous study, quarter-wise milk samples were examined by Surf Field Mastitis Test to determine the prevalence of mastitis (Muhammad *et al.*, 1995). Fresh milk was collected from buffaloes considered apparently normal. Present study focused on determining the percentage of subclinically affected animals. Gel formation was divided into four categories i.e. + = moderate, ++ = severe, +++ = more severe, ++++ = very severe. Only first two conditions were present, while other two were absent (Table 1).

In the sub-clinical mastitis, the most important factor affecting somatic cell count in milk is mammary gland infection (Eberhart *et al.*, 1979; Reneau, 1986). Inflammation of mammary glands increases the number of somatic cells in milk. When milk from sub-clinically mastitic quarters is mixed with anionic detergent solutions such as CMT or SFMT reagent, a chemical reaction causes the gel formation (Schalm *et al.*, 1971). Ideally milk from all four quarters should be tested separately. Mastitic milk is unwholesome for human consumption due to the presence of bacteria and their toxins, as well as high number of white blood cells.

Non-infected animals should be milked ahead of infected ones. Using a simple test like SFMT, farmers should test the dairy animal before purchasing, if positive, avoid buying such animal.

Table 2: Animal wise prevalence of sub-clinical mastitis in buffaloes in 4 tehsils of District Attock

Area	Animals tested	Affected animals	Affected %age
Attock	75	55	73.33
Jand	75	60	80.00
Pindighaib	75	62	82.61
Fateh Jang	75	57	76.00

Average affected animals = 77.98 %

REFERENCES

- Anwar, M. and A. Q. Chaudhry, 1983. Subclinical mastitis in buffaloes around Lahore. Pakistan Vet. J., 3(3): 142.
- Ali, S. L., P. G. Superkar and P. C. Shukla, 1989. A study of incidence of subclinical mastitis (SCM) in cows in Mhow region. Gujrat Vet., 16: 16-28
- Eberhart, R. J., H. Gilmore, L. J. Hutchinson and S. B. Spencer, 1979. Somatic cell count in DHIA samples. Proc. Ann. Meet. Nat. Mastitis Council, Louisville, Kentucky, USA. pp: 32-40.
- Fazal-ur-Rehman, 1995. Studies on I) Evaluation of surf field mastitis test for the detection of sub-clinical mastitis in buffaloes and cattle, II) Antibiotic susceptibility of pathogens. MSc Thesis, Univ. Agri. Faisalabad, Pakistan.
- Hashmi, H. A. and M. A. Muneer, 1981. Subclinical mastitis in buffaloes at Lahore. Pakistan Vet. J., 1(4): 164.
- Hussain, M., N. Khalid and I. Naeem, 1984. Subclinical mastitis in cows and buffaloes, identification and drug sensitivity of causative organisms. Pakistan Vet. J., 4: 161-164.
- Lightner, J. K., G. Y. Miller, W. D. Hueston and C. R. Dorn, 1988. Estimation of the costs of mastitis, using National Animal Health monitoring system and milk somatic cells count data. J. Amer. Vet. Med. Assoc., 192(10): 1410-1413.
- Merrill, W. G. and D. M. Galton, 1989. Mastitis and its control. In: Milk Quality: A Pro-Dairy Management Focus Workshop for Farm Managers, Cornell University, New York, USA.
- Muhammad, G., M. Athar, A. Shakoor, M. Z. Khan, Fazal-ur-Rehman and M. T. Ahmed, 1995. Surf field mastitis test: An expensive new tool for evaluation of wholesomeness of fresh milk. Pakistan J. Food. Sci., 5(3-4): 91-93.
- Rehman, H., D. S. Sambyal and K. K. Baxi, 1983. Incidence and etiology of subclinical mastitis in cows and buffaloes in Punjab. J. Res. Punjab Agri. Univ. Ludhiana, India, 20(2): 208-212.
- Radostits, O. M., D. C. Blood, C. C. Gay, K. W. Hinchiff and J. A. Handerson, 2000. Veterinary Medicine. 9th Ed., W. B. Saunders Company, London, U.K.
- Reneau, J. K., 1986. Effective use of dairy herd improvement somatic cell counts in mastitis control. J. Dairy Sci., 69: 1708-1720.
- Said, A. H. and A. S. Abd-el-Malik, 1968. Diagnosis, incidence and treatment of subclinical mastitis in dairy buffaloes. J. Vet. Sci. (United Arab Republic), 5(2): 171-181.
- Schalm, O. W., E. J. Carrol and N. C. Jain, 1971. Bovine Mastitis. Lee and Febiger, Philadelphia, USA.
- Schultz, L. H., R. W. Brown, D. E. Jasper, R. W. M. Berger, R. P. Natzke, W. N. Philpot, J. W. Smith and P. D. Thomson, 1978. Current Concepts of Bovine Mastitis. 2nd Ed. The National Mastitis Council, Inc. Washington DC, USA. pp: 6-9.
- Shah, A. H., 1987. Bovine subclinical mastitis due to *Staphylococcus aureus* and its treatment with cloxacillin, rifampicin and their combination. MSc Thesis. Univ. Agri. Faisalabad, Pakistan.