

Sub-Clinical Bovine Mastitis in Attock District of Punjab (Pakistan)

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ABSTRACT

The present study was carried out to determine the quarter-wise and animal-wise prevalence of sub-clinical mastitis in cattle in four tehsils i.e., Attock, Fateh Jang, Jand and Pindighaib of district Attock of Punjab. Milk samples were collected from apparently mastitis free 1200 quarters of 300 cattle. The samples were subjected to Surf Field Mastitis Test (SFMT). The overall quarter-wise prevalence was 44.17% while animal-wise prevalence was 44%. The maximum quarter-wise prevalence was found to be 15% in Tehsil Jand followed by 10, 13.33 and 10% in the tehsils Attock, Pindighaib and Fateh Jang, respectively. While the maximum animal-wise prevalence was 56% in Tehsil Jand followed by 46.67, 40 and 33.33% in the tehsils Attock, Pindighaib and Fateh Jang, respectively.

Key Words: Bovine; Sub-clinical mastitis, Surf field mastitis test

INTRODUCTION

Mastitis, being the most costly disease of dairy industry, results in profound losses in terms of production throughout the world. Mastitis is the inflammation of milk gland 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 bovines.

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 USA, sub-clinical mastitis is responsible for 60-70% of total economic losses associated with all mastitic infections (Merrill & 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 cattle in four tehsils i.e., Attock, Fateh Jang, Jand and

Pindighaib of Attock district of Punjab, using an easy animal-side test viz. Surf Field Mastitis Test.

MATERIALS AND METHODS

District Attock is included in arid area of Punjab province of Pakistan. Dhani breed (local breed of this area) of cattle was used in present study. Milk samples from apparently mastitis free 1200 quarters of 300 cattle were collected. The samples were subjected to Surf Field Mastitis Test (SFMT). For this purpose, 3% 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 cattle in Attock District of Punjab using SFMT has been shown in Tables I and II, respectively. The quarter-wise prevalence was found to be 44.17% while animal-wise prevalence was 44%. A previous study has shown quarter-wise and animal-wise prevalence of mastitis as 64 and 30.5%, respectively in buffaloes (Fazal-ur-Rehman, 1995). Herd-mate animals had shown higher prevalence of sub-clinical mastitis in buffaloes i.e.75% versus 44.44% in individually managed animals. Said and Abd-el-Malik (1968) reported a prevalence of 38.07% 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% for

Table I. Quarter-wise prevalence of sub-clinical mastitis in cattle in 4 tehsils of district Attock

Area	Total quarters tested	Affected quarters		One positive quarter		Two positive quarters	
		No.	%	No.	%	No.	%
Attock	300	100	33.33	70	23.33	30	10
Jand	300	145	48.33	100	33.33	45	15
Pindighaib	300	150	50	110	36.67	40	13.33
Fateh Jang	300	135	45	105	35	30	10

Average affected quarters = 44.17 %

Table II. Animal wise prevalence of sub-clinical mastitis in cattle in 4 tehsils of district Attock

Area	Animals tested	Affected animals	Affected %
Attock	75	35	46.67
Jand	75	42	56.00
Pindighaib	75	30	40.00
Fateh Jang	75	25	33.33

Average affected animals = 44 %

buffaloes. Rehman *et al.* (1983) reported, on the basis of direct, indirect and cultural examination, a prevalence of 59.2 and 36.8% of sub-clinical mastitis in cows and buffaloes, respectively. Hussain *et al.* (1984) documented a prevalence of 33% in cows and 8% in buffaloes on the basis of results of Whiteside test. Shah (1987) used Ciba-Geigy mastitis test and found that 34.48% buffaloes suffered from sub-clinical mastitis. Anwar and Chaudhry (1983) have reported a prevalence of 47.5% in buffaloes after using Strip Cup test, pH test and Whiteside test. Bachaya *et al.* (2005) also reported that over all quarter-wise prevalence 58.7% while animal-wise prevalence was 77.98% in buffaloes on the basis of Surf Field Mastitis Test. The difference in prevalence of sub-clinical mastitis observed in the present and the previous studies may be due to differences in management practices, methods of detection, breeds of the animals, immune response of animals and climatic conditions.

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 I).

In the study area, there are extreme weather conditions and also deficiency of fodder is a major problem. These factors may favour mastitis and create stress to the body; hence immunity decreases, leading to increased sub-clinical incidence associated with contagious and environmental mastitogens. 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.

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