QUARTER-WISE COMPARATIVE PREVALENCE OF MASTITIS IN BUFFALOES AND CROSSBRED COWS

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ABSTRACT

The present study was designed to determine the quarter-wise comparative prevalence of mastitis in buffaloes and crossbred cows. Milk samples collected from 50 dairy buffaloes and 50 crossbred cows were tested for subclinical mastitis by Surf Field Mastitis Test. In addition, all milk samples were processed for isolation and identification of pathogens. In buffaloes, overall prevalence of subclinical mastitis was 27%, clinical mastitis 4% and blind quarters 10%. In crossbred cows, subclinical mastitis was observed in 36%, clinical mastitis in 5.5% and blind quarters in 8% quarters. Prevalence was higher (32%) in hindquarters of crossbred cows than those of buffaloes (29%). Among the isolates, *Staphylococcus aureus* showed the highest (45%) frequency, followed by *Streptococcus agalactiae* (23%), *E. coli* (18%) and *Bacillus spp*. (14%) in buffaloes. In case of crossbred cows, *Staphylococcus aureus* , *Streptococcus agalactiae* , *E. coli* and *Bacillus spp*. were isolated from 48, 30, 13 and 8% milk samples respectively.

Key words: Buffaloes, crossbred cows, mastitis, quarter-wise prevalence.

INTRODUCTION

Mastitis denotes an inflammatory condition of the udder irrespective of the cause. It is a global problem, characterized by physical, chemical and micro-biological changes in the milk and pathological changes in the glandular tissue of the udder.

In crossbred cows, the udder has to undergo rapid changes in relation to size, position and adjustment due to rapid removal of large volume of milk and as such it is prone to injury and infection. The resulting inflammation is referred to as mastitis. It poses the risk for transmission of major zoonotic diseases like tuberculosis, leptospirosis, brucellosis, streptococcal sore throat and gastroenteritis (Radostits *et al*., 1994). Mastitis represents a serious problem to be considered due to the economic losses for which it is responsible (Ahmad, 2001). According to Ratafia (1987), worldwide annual losses caused by this disease were nearly 35 billion US dollars. The losses due to mastitis might be higher in Pakistan because the mastitis prevention practices like teat dipping and dry period antibiotic therapy are not in practice (Arshad, 1999). Buffaloes have been reported to be less susceptible to mastitis than cattle (Thapa and Kaphle, 2002). Subclinical mastitis is 3 to 4 times more common than the clinical mastitis and causes great losses in the dairy herds (Jasper *et al*., 1982). It is one of the most important reasons for termination of lactation and involuntary culling of dairy buffaloes (McDowell *et al*., 1995). A recent study conducted in North Western Frontier Province (NWFP) of Pakistan has indicated that mastitis is an important cause of premature culling in local born and imported Holstein-Friesian cattle; accounting for 22.5% of all culling during a 10 years period (Samiullah *et al*., 2000).

In order to increase the milk yield, crossing of the local nondescript cows with the semen of bulls of temperate breeds has been recommended. Published information on the quarter-wise comparative prevalence of mastitis in crossbred cows and buffaloes is extremely scanty. Therefore, quarter-wise comparative prevalence of mastitis in buffaloes and crossbred cows has been described in the present paper.

MATERIALS AND METHODS

Milk samples from 100 lactating animals (50 buffaloes and 50 crossbred cows) belonging to 3 institutional herds (Ayub Agriculture Research Institute Faisalabad; Livestock Experimental Station, Department of Livestock Management, and Department of Animal Breeding and Genetics, University of Agriculture, Faisalabad) were aseptically collected. Crossbred cows (n=23) selected from the dairy herd of Department of Animal Breeding and Genetics were machine milked. All other animals (27 crossbred cows and 50 buffaloes) were hand milked with letdown of milk induced by suckling calves (15 crossbred cows and 18 buffaloes), hand massage (17 buffaloes and 10

crossbred cows) or oxytocin injection (15 buffaloes and 2 crossbred cows). Standard mastitis control measures such as post milking antiseptic teat dipping and dry period antibiotic therapy were not practiced in any of the study herd. Determination of quarter-wise prevalence of mastitis in apparently mastitis free animals was based on Surf Field Mastitis Test (Muhammad *et al*., 1995., Rehman, 1995) and microbiological examination of milk (National Mastitis Council Inc, 1990). Milk samples from clinically affected quarters were processed directly for bacterial isolation (National Mastitis Council Inc, 1990).

RESULTS AND DISCUSSION

In the present study, total number of quarters affected with subclinical mastitis were 54(27%) out of 200 in buffaloes. Among these, 8(14.8%) were right fore, 16(29.6%) right hind, 10(18.5%) left fore and 20(37%) left hind quarters. In cows, 72 out of 200 (36%) quarters were infected. This included 14(19.4%) right fore, 20(27.8%) right hind, 13(18.1%) left fore and 25(34.7%) left hind (Fig. 1). Thus, there was higher incidence in hindquarters in buffaloes than crossbred cows and among hindquarters, left hindquarters were found to be more susceptible. In case of forequarters, there was higher incidence in crossbred cows than buffaloes and among forequarters, right forequarters were found to be more susceptible, as also reported by Saini *et al*. (1994).

In case of clinical mastitis, the total number of quarters affected in buffaloes were 8(4%). Out of these, 1(12.5%) was right fore, 2(25%) right hind, 1(12.5%) left fore and 4(50%) left hind quarters. Among cows, 11(5.5%) quarters were affected. Out of these, 1(9.1%) right fore, 2(18.2%) right hind, 3(27.3%) left fore and 5(45.5%) left hind quarters (Fig. 2). So, there was higher incidence in hindquarters in buffaloes than crossbred cows and among hindquarters, left hindquarters were found to be more susceptible. In case of forequarters, there was higher incidence in crossbred cows than buffaloes and among forequarter, left forequarter were found to be more susceptible, as also reported by Saini *et al*. (1994).

The overall prevalence of mastitis was lower in buffaloes as compared to the crossbred cows. This lower prevalence might be attributed to the tighter teat sphincter of buffaloes as compared to that of cows (Uppal *et al*., 1994).

The total number of blind quarters in buffaloes were 20(10%), of which 1(5%) was right fore, 9(45%) right hind, 3(15%) left fore and 7(35%) left hind quarters. Out of 16 (8%) blind quarters in cows, 2(12.5%) were right fore, 5(31.3%) right hind, 2(12.5%) left fore and 7(43.8%) left hind quarters (Fig. 3). So, there was higher incidence in hindquarters in buffaloes than crossbred cows and among hindquarters, right hindquarters were found to be more susceptible. Iqbal (1992) reported that the prevalence of blind quarters was higher in hindquarters as compared to the

Fig. 1: Comparative quarter wise prevalence of sub-clinical mastitis in buffaloes and crossbred cows.

forequarters and slightly higher in right quarters than left ones. In case of forequarters, both species were equally affected, as also reported by Rehman (1995).

The major pathogens isolated from milk samples were *Staphylococcus aureus* 28(45%), followed by *Streptococcus agalactiae* 14(23%), *Escherichia coli* 11(18%) and *Bacillus spp*. 9(14%) in buffaloes. In crossbred cows, *Staphylococcus aureus* 41(49%), *Streptococcus agalactiae* 25(30%), *Escherichia coli* 11(13%) and Bacillus spp. 6(8%) were isolated (Fig. 4). Similar results were observed by Memon *et al*. (1999) that the major pathogenic organism in mastitis was *Staphylococcus aureus* (38%), followed by *Streptococcus uberus* (13%), *Escherichia coli* (11%) and *Klebsiella pneumoniae* (11%). Bhalerao *et al*. (2000) noted the major pathogenic organism as *Staphylococcus aureus* (54.55%), followed by Streptococci (36.36%), *Escherichia coli* (4.55%) and Klebsiella (2.27%).

It was concluded from present the study that prevalence of clinical and subclinical mastitis was higher in hindquarters than forequarters and among hindquarters, left hindquarters were more susceptible than the right.

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