SHORT COMMUNICATION

RELATIONSHIP BETWEEN PREVALENCE OF MASTITIS IN CROSS BRED COWS AND FARM MANAGEMENT CONDITIONS IN LAHORE, PUNJAB

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ABSTRACT: The aim of study was to determine the relationship between widespread presence of clinical/ sub-clinical mastitis and different conditions of farm management for Friesian x Sahiwal (FxS) crossbred cows in Lahore district of Punjab, Pakistan. A total of 107 FxS crossbred cows were selected from three dairy farms having different management conditions (A: Very good, B: Good and C: Poor). The data of clinical and sub-clinical mastitis was collected using the cardinal sign (inflammation of udder) and white side test. Overall incidence of mastitis was recorded 26.2% including 12.72, 13.63 and 16.66% at farms with very good, good and poor management conditions, respectively. However, sub-clinical mastitis was recorded 9.09, 13.63 and 16.66% at farms with very good, good and poor management conditions. Prevalence of mastitis was 7.71% Sub-clinical and 7% clinical in udder quarters. It was concluded that mastitis level has linear relation with management conditions of farms.

Keywords: Clinical mastitis, Sub-clinical mastitis, Crossbred cattle, White side test.

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INTRODUCTION

Mastitis is an inflammation of mammary glands with physical and chemical alterations in milk. Somatic cell number is increased and pathological changes in the breast tissue are observed (Gianneechini *et al*., 2002). This is a severe problem that dairy industry faces in terms of financial losses (Beyene and Tolosa, 2017). A loss of about $83.37 per cow per year has been reported by FAO (2009) due to this disease. Milk containing mastitis agents is also risk of transmission of zoonotic diseases like listeriosis, brucellosis, tuberculosis, gastroenteritis, Streptococcus tonsillitis and leptospirosis (Morwal and Sahrma, 2017; Radostits *et al*., 2000). Sub-clinical mastitis is more prevalent and damaging to dairy industry than clinical mastitis (Dieser *et al*., 2014). In crossbred cows, parity, stage of lactation, large size and position of udder, teat end shape and type of bedding material are significantly associated with presence of mastitis (Abebe *et al.,* 2016). In cattle population, Pakistan is leading in Asia. Punjab province is hub of dairy production in Pakistan and plays a key role in milk production (Anonymous, 2018; LCP 2018). In Pakistan, large number of crossbred cows are present in dairy farms. Preventive measures of mastitis like antimicrobial treatment in dry period and post milking dipping of teats are not commonly carried out in Pakistan, which might increase the economic losses (Khan and Khan, 2006). Unhygienic milking increases the chances of transmission of mastitis causing agents from infected cow to healthy cow at milking (Abebe *et al.*, 2016). A little data is available on the prevalence of quarter-wise distribution and farm condition association in crossbred cows. The key purpose of this study was to find out the animal wise and quarter wise prevalence of sub-clinical and clinical mastitis under different management levels of dairy farms in Lahore and its surrounding areas.

MATERIALS AND METHODS

This research was conducted in surroundings of capital city of Punjab, Lahore. Three farms having Frisian x Sahiwal crossbred cattle with different management conditions (A: Very good, B: Good and C: Poor) were selected. Farm A was located at Darogha wala Road having 55 lactating cows out of total 100 F×S crossbred cows. Farm B was located on Ghazi road having 40 F×S crossbred cows with 22 lactating animals. Farm C was located at Kot Radha Kishan having 30 lactating animals out of 62 F×S crossbred cows.

Occurrence of clinical mastitis: A total of 107 lactating cows were observed for presence of clinical mastitis based upon clinical signs. The diagnosis of mastitis was

carried out on the basis of different signs including abnormality in milk, hardness and inflammation of udder. Data about cow identity, stage and number of lactations were also collected. The cattle declared negative for clinical mastitis were screened by Surf field mastitis test (Muhammad and Rashid, 2012) and White Side Test (Whiteside, 1939).

RESULTS

Out of 107, 28 (26.16%) animals were suffering from mastitis. Out of these 28, 15 were positive for clinical mastitis and 13 for sub-clinical mastitis (Ten were positive for SFMT and seven for WST). Out of 428 quarters of 107 animals, 63 (14.71%) were positive for mastitis. Out of these 63 quarters, 30/428 (7%) were positive for clinical and 33/428 (7.71) for sub-clinical mastitis.

Relationship between mastitis and farm management: The prevalence of mastitis under different farm conditions is presented in table-2. High prevalence of mastitis was found in farm C (poor farm conditions) with 33 cases of mastitis. The incidence rate of clinical mastitis and sub-clinical mastitis was 16.66 and 16.66%, respectively. Minimum mastitis cases (21.81%) were found in farm-A (very good hygienic conditions) with 12.72 and 9.09% incidences of clinical and sub-clinical mastitis, respectively.

Table 1. Percent prevalence of clinical and sub-clinical mastitis in F×S-Crossbred cattle at different farm managemental conditions.

Farms	No. of lactating animals	No. of mastitic animals	Clinical mastitis (%)	Sub clinical mastitis (%)	Total percentage
Farm A	55	12	12.72	9.09	21.81
Farm B	22	6	13.63	13.63	27.27
Farm C	30	10	16.66	16.66	33.33
Total	107	28	14.01	12.14	26.16

Farm A: Very good managemental conditions, Farm B: Good managemental conditions and Farm C: Poor managemental conditions

Table 2. Quarter wise prevalence of sub-clinical mastitis in F×S-Crossbred cattle at different farm managemental conditions.

Farms	No of animals	One quarter (%)	Two quarters (%)	Three quarters (%)	Four quarters (%)
Farm A	55	3 (9)	3 (5)	3 (4)	3 (4)
Farm B	22	3(13.63)	3 (13.63)	0 (0)	0 (0)
Farm C	30	3 (10)	3 (10)	1 (3.33)	3 (10)
Total	107	9 (8.41)	9 (8.41)	4 (3.73)	6 (5.60)

Farm A: Very good managemental conditions, Farm B: Good managemental conditions and Farm C: Poor managemental conditions

DISCUSSION

In the economic point of view, mastitis is the main disease of cattle. We investigated the relationship of occurrence of mastitis with managemental level of farm. The prevalence of mastitis in F×S crossbred cows was 26% in present study. These results were supported by Beyene and Tolosa (2017). They found that a high number of crossbred animals (58.46%) were positive to mastitis almost under similar farm conditions. The farm management conditions have been greatly related with prevalence of mastitis. The findings of present study were not in line to Asmare and Kassa (2017). They reported that Jersey (1.3 times) and Holstein Friesian (1.1 times) are more susceptible to mastitis than crossbred animals. The cause of this divergence may be due to more resistance of crossbred to mastitis than exotic breeds and different farm conditions.

Clinical cases of mastitis in the present study were 15 (14.01%) which was in accordance with Gupta *et al.* (2017), De and Mukherjee (2009), Almaw *et al.* (2012), Kayitsinga *et al.* (2017), Kebebew and Jorga (2016) who reported, prevalence of clinical mastitis 2, 15.18, 21.26, 18 and 9.9% in cows, respectively. However, some other studies (Kvapilík, 2014; Tafa *et al.*, 2015, Kvapilík *et al.*, 2015) showed higher prevalence of clinical mastitis. Variation of the prevalence might be due to the non-identical managemental methods (watering, milking and bedding), availability of veterinary facilities, and academic position of the farmer.

Rahman *et al.* (2014) and Dangore *et al.* (2000) described 14.04% and 13.24% prevalence of asymptomatic mastitis which was closely associated to

our findings (12.14% sub clinical mastitis). These findings were not in accordance to Kebebew and Jorga (2016) and Kabir *et al.* (2017) who reported 31 and 51% sub-clinical mastitis in cows, respectively.

The differences in the incidence rate of clinical mastitis in dairy herds were associated with factors such as climate, breed, management and level of production which was observed in studies on herds from different geographical locations.

Prevalence of quarter wise mastitis in this study was 58.87% which was in according to the foregoing research. They reported the quarter wise prevalence (63.1%) and among quarters was 63/428 (14.71%), (Khan and Muhammad 2005).

In this study, clinical mastitis was 28.37% quarter wise which was supported by the previous report of Gianneechini *et al.*, (2002) who indicated 26.7% cases of clinical mastitis. In the current study, sub-clinical mastitis was 30.84% in accordance to Seyoum *et al*. (2003) in which they observed 33.74% sub-clinical mastitis. Prevalence of mastitis in hind quarters was more than front quarters. The different observations about the mastitis prevalence in various farms might be due to the differences in husbandry and management conditions in the area and absence of awareness about mastitis which causes severe loss (Argaw and Tolosa, 2008; Khan and Muhammad, 2005).

The present study reported that by improving the management conditions (preventing water exposure to bedding, udder, etc.) and providing better veterinary services to the farmers and creating awareness among farmers, the occurrence of mastitis in cross bred cow can be decreased. This may be due to the managemental condition which was in compliance to the previous results in which they reported the differences in prevalence might be due to dissimilarities in husbandry and management condition and lack of perception of the farmers to the damage caused by mastitis in cattle (Argaw and Tolosa, 2008; Khan and Muhammad, 2005) Our outcome findings were agreed to the Prost (1984) who mentioned that by enhancing factors like general animal health, instruments used for milking and building, the occurrence of clinical mastitis was remarkably declined. By cleanliness of udders, milking parlors and hands and also paying attention to disinfection of bedding reduced the presence of mastitis in cattle which is in accordance to our results. (Rathod *et al.* 2017).

This quarter wise existence of sub clinical mastitis more than clinical mastitis was directly linked with farmer's awareness. The distribution of clinical mastitis, animal wise was higher (Table-1) than sub clinical mastitis. Better managemental practices including milking management, washing with water and bedding at the farms can reduce these incidences. In decreasing the cases of both forms of mastitis, farmers education plays a major role. Extension packages that enhance farmers' perception on sub-clinical mastitis are valuable to improve farmer's income by controlling mastitis.

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