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Research Article

PREVALENCE OF SUBCLINICAL MASTITIS IN AN ORGANIZED COW HERD

SUPRIYA[1], VIVEK SAXENA[2] and DEEPIKA LATHER[3]
Department of Microbiology
Chaudhary Charan Singh University, Meerut, Uttar Pradesh

ABSTRACT

A total of 240 milk samples from 60 apparently healthy lactating cows from an organized herd in Meerut, Uttar Pardesh formed the basis for the present study. Prevalence of SCM was studied following International Diary Federation (IDF) criteria based on cultural examination and somatic cell count (SCC) of the milk. A total of 53.33% animals were culturally positive and 35% had SCC more than 5 lacs /ml of milk. Quarterwise infection rate was found to be 32.5% and 22.5% on the basis of cultural isolation and SCC, respectively. According to the IDF criteria, 14.17, 18.33 and 8.35% quarters had subclinical, latent and non specific mastitis, respectively.

Key words: Prevalence, subclinical mastitis, intramammary infection, dairy cows

Mastitis is a complex disease that occurs in clinical and subclinical forms in buffaloes and cows. It is a world wide problem of the dairy industry responsible for heavy economic losses (Quinn *et al.,* 1994). Dua (2001) reported annual losses due to clinical and subclinical mastitis (SCM) to the tune of Rs 6053.21 crores in India. The SCM usually goes unnoticed because the milk and udder appear normal. Subclinically infected quarters can develop clinical mastitis and the rate of new infections can be high (Zdunczyk *et al.,* 2003). The determination of the somatic cell count (SCC) is most commonly used for detecting SCM. In the present study, the prevalence of SCM was studied on International Diary Federation (IDF) criteria based on cultural examination and SCC of the milk.

MATERIALS AND METHODS

A total of 240 milk samples from 60 apparently healthy lactating cows were collected from an organized herd in Meerut, Uttar Pardesh. The samples were collected by standard milk sampling technique and were examined following standard procedures (Sears *et al.,* 1993) for cultural isolation on to 5% sheep blood agar and Mac Conkey's lactose agar plates. The plates were incubated aerobically at 37^0C for 24-48 h. The SCC of the milk samples was performed as described by Schalm *et al.* (1971). For staining of the milk smears, Newman Lampert stain was used. Milk sample containing SCC more than 5 lacs cells /ml was considered positive for SCM.

[1]Corresponding author
[2]CMVL, Meerut
[3]Department of Veterinary Pathology, COVS, CCS HAU, Hisar

RESULTS AND DISCUSSION

Of the 60 apparently healthy cows, 53.33% cows were culturally positive and 35% cows had SCC more than 5 lacs/ml of milk (Table 1). Quaterwise infection rate was found to be 32.4% and 22.5% on the basis of cultural isolation and SCC, respectively. In a similar study, Saluja *et al.* (2004) reported quarterwise infection rate of 31.3% in a dairy herd. In an earlier study, the percentages of the cows (and quarters) with SCM were found to be 43.8% (24.3%) when assessed by cultural examination (Karimuribo *et al.,* 2008). Out of 5707 quarter milk samples, 1070 (18.74%) and 1878 (32.90%) samples were found positive for clinical and subclinical mastitis, respectively (Sharma and Sindhu, 2007). The high prevalence in the present study could be attributed to a group of factors such as poor habitat, lack of hygiene, unbalanced food and bad climate. These factors might have played a role in rendering the udder more susceptible to intra mammary infections (Ghazi and Niar, 2006).

According to the IDF criteria, 14.17, 18.33 and 8.35% quarters had subclinical, latent and non specific mastitis, respectively in this study. The prevalence rate of SCM on IDF criteria was lower than cultural examination or SCC alone. These findings are in agreement with the observations of Tuteja (1999) and Sharma and Kapur (2000).

The criteria adopted by the IDF for the diagnosis of SCM is based on the isolation of the organism and elevated SCC more than the 5 lacs/ml of milk which provides comprehensive picture of prevalence of SCM in the given herd. Giesecke and Van den Heever (1974)

Table 1
Cultural examination and somatic cell count (SCC) on milk samples (n=240 quarter)

Animals culturally positive	Quarters culturally positive	Animals showing SCC >5lacs/ml	Quarters showing SCC >5lacs/ml	Quarters showing SCC >5lacs/ml & culturally positive	Quarters showing SCC <5lacs/ml & culturally positive	Quarters showing SCC<5 lacs/ml & culturally negative
32/60	78/240	21/60	54/240	34/240	44/240	20/240
53.33 %	32.40%	35.00%	22.50%	14.17%	18.33%	8.35%

have reported an increase in SCC of milk by a number of factors other than SCM. In the present study, 8.35% of the quarters had SCC more than 5 lacs/ml of milk and culturally negative were found to have non specific mastitis. This in close agreement to the findings of Tuteja (1999) and Sharma and Kapur (2000) who reported prevalence rate of 7.38% and 9.42%, respectively for non specific mastitis. Failure to detect pathogens in such cases may be due to the intermittent excretion of the organisms or the disappearance because of spontaneous recovery (Tola and Cabelli, 1985). Increase in the SCC in the first few days of lactation is considered to be physiological (Natzke *et al.*, 1972). Other factors like corticosteroid therapy, intramammary infusions, change in diet and climate may also influence SCC.

A total of 18.33% of the quarters were found to have latent infections (SCC below 5 lacs/ml of milk and culturally positive). These findings are in conjunction with the findings of Sharma and Kapur (2000) who reported 15.58% prevalence for latent infections. The significance of latent infections cannot be undermined as some of them are likely to convert into SCM or clinical mastitis due to unfavorable environmental factors. Schalm *et al.* (1971) concluded that dilution of the milk could influence the concentration of cells in per unit volume of milk. Therefore, mild inflammatory reactions accompanied by low degree of cellular reactions go undetected. Hence low count did not necessarily indicate that udder was free from mastitis.

Thus, the present study revealed the prevalence of udder infections to be as high as 53.33%. However, on the basis of IDF criteria, 14.17% quarters were affected with SCM. As the SCM usually goes unnoticed, it is important to screen a particular dairy herd for this disease at regular intervals so as to adopt an effective treatment regimen that would prevent serious economic losses.

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