SUB-CLINICAL MASTITIS IN DAIRY BUFFALOES OF REWA DISTRICT OF MADHYA PRADESH

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ABSTRACT

This study was conducted to investigate the sub-clinical mastitis (SCM) in dairy buffaloes by employing the milk pH, Electrical Resistance (ER), Somatic Cell Count (SCC) and California Mastitis Test (CMT). Different risk factors for SCM were taken into account in the present study. The results showed that the overall prevalence of SCM was 12.50% and highest prevalence was observed in buffaloes of age group between 3-5 years (15.56%) followed by age group of 5-8 year (11.76%), while lowest in age group of 8 years and above (10.00%). The breed wise prevalence of SCM was found to be highest in Murrah (20.51%) and lowest in native non-descript breed of buffaloes (9.92%). Prevalence was recorded higher at unorganized farms (13.24%) than organized farms (8.33%) and kutcha housing (14.03%) than at puccka housing (8.70%). In conclusion, SCM was found to be directly associated with age, breed, environmental and managemental factors. The dairy farmer must take necessary precautionary measures against SCM to curtail the economic losses.

Milk is an important dietary source for the majority of urban and peri-urban as well as rural population. However, milk produced from dairy animals often does not fulfill the country's requirements due to various factors. Among them, mastitis is a major factor and results in diminished milk production all over the world (Hussain *et al.*, 2013). This disease is mainly associated with decrease in milk production, deterioration of milk quality and increased costs of production. Mastitis can be divided into clinical and sub-clinical form. Clinical mastitis (CM) has visible changes in the udder and milk while sub-clinical mastitis (SCM) doesn't have so (Hussain *et al.*, 2013). SCM is 3 to 40 times more common than the CM and causes huge economic losses to the dairy industry (Sinha *et al.*, 2014). This disease is of multifactorial nature and its prevalence is found to be significantly influenced by numerous risk factors. Such information is important to contemplate while designing appropriate strategies that would help to reduce its prevalence and effects. Therefore, keeping the importance of SCM and its negative impact on dairy industry in view, the present study was carried out to determine the prevalence of SCM and associated risk factors in Rewa district of Madhya Pradesh, India.

MATERIALS AND METHODS

Detection of SCM

The SCM was detected by indirect screening tests

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viz., Milk pH (Constable *et al.*, 2019), Electrical Resistance (Siddique *et al.*, 2013), Somatic Cell Count (Harmon, 1994) and California Mastitis Test (David *et al.*, 2005).

Epidemiological studies: Epidemiology of SCM was studied in lactating dairy buffaloes of Rewa district of Madhya Pradesh (India).The standard questionnaire was prepared to collect the information from the organized/ unorganized farms/villages taking different parameters, about age, season, breed and some managemental factors. The milk samples were collected from 160 buffaloes spanning from June, 2018 to July, 2019.

Statistical analysis: The data collected through questionnaire were entered into an Excel sheet of Microsoft Office Excel and subjected to analysis by SPSS version 16.0.

RESULTS AND DISCUSSION

Milk profile of healthy and SCM infected buffaloes

In the present study, milk of 160 buffaloes was screened by pH, ER, SCC and CMT. The mean value of milk pH, ER, SCC and CMT was 6.68 ± 0.05, 370.00 ± 12.91, $1.28 \pm 0.09 \times 10^5$ cells/ml and 0 (negative) CMT score, respectively in apparently healthy buffaloes, whereas the corresponding values significantly ($p < 0.05$) changed to 7.53 ± 0.04, 308.33 ± 20.23, $29.68 \pm 5.97 \times 10^5$ cells/ml and +/++/+++ CMT score in SCM infected buffaloes, respectively.

Prevalence of SCM on the basis of age

The age wise prevalence of SCM was highest in buffalo of age group between 3-5 years (15.56%) followed by those in the age group of 5-8 year (11.76%), while lowest (10.00%) was observed in age group of 8 years and above (Table 1). In the present study, 3-5 years age group of buffaloes were more susceptible for SCM, which may be due to increased milk production, nutritional stress and less immunity. The present findings are in close agreement with the result of Singh *et al.* (2021) who reported highest prevalence (53.70%) in 3-5year age followed by 28.13% in 5-8 year and lowest 18.33% in the age of 8 year and above. In contrast to present study, Yadav *et al.* (2019) noted highest prevalence (19.35%) in 6-8 years of age group, followed by 15.79% (4-6 years), when the animals were in stage of their peak milk production and 15.25% (8-10 years) and lowest (12.90%) in 10-12 years showing not much effect of age on incidence.

Prevalence of SCM on the basis of breed

The breed wise prevalence of SCM in buffaloes was observed to be 20.51% in Murrah breed and 9.92% in non-descriptive breed (Table 1). The prevalence of SCM was more in descriptive breed compared to the native non-descriptive ones. These findings are more close to Aliul *et al.* (2020), who reported 12.50% of Murrah breed and 10.42% of local non-descriptive buffaloes breed positive with SCM. The difference in prevalence of SCM between the descriptive breed and native non-descriptive buffaloes may be attributed with the high milk yielding capacity of the former and hence making them more prone to mastitis as compared to low producing native non-descript buffaloes with higher resistance. Mourya *et al.* (2020) and Singh *et al.* (2021) also found higher prevalence in crossbred than local non descriptive cattle breed in their study, which support the present findings. Such differences in findings may be due to varying degree of susceptibility in different breeds of animals, types of animal husbandry practices followed by farmers, geographical and climatic conditions in different areas.

Prevalence of SCM on the basis of season

Season also affect the prevalence of SCM, the highest in rainy or monsoon season (20.00%), followed by winter season (12.66%) and lowest in summer season (9.84%) in buffaloes was observed in the present study (Table 1). The present results are in close agreement with findings of Aliul *et al.* (2020) who reported prevalence of 11.11%, 10.94%and 10.00% in rainy, summer and winter season, respectively in dairy buffaloes. Diwakar *et al.* (2020) reported highest prevalence in the rainy season (33.94%) followed by winter season (24.77%), summer season (22.01%) and the least cases were recorded in the spring season (24.77%) in buffaloes. The present study indicates

Table 1

Prevalence of SCM in dairy buffaloes of Rewa district of Madhya Pradesh

Parameters	Group	No. of buffaloes screened	No. of buffaloes positive for SCM	Prevalence (%)
Age	3-5 year	45	7	15.56
	5-8 year	85	10	11.76
	8 year and above	30	3	10.00
	Total	160	20	12.50
Breed	Non-descriptive	121	12	9.92
	Murrah	39	8	20.51
	Total	160	20	12.50
Season	Winter	79	10	12.66
	Rainy	20	4	20.00
	Summer	61	6	9.84
	Total	160	20	12.50
Rearing pattern	Organized	24	2	8.33
	Unorganized	136	18	13.24
	Total	160	20	12.50
Type of housing	Kutcha	114	16	14.03
	Puccka	46	4	8.70
	Total	160	20	12.50

that the risk of developing SCM in monsoon/rainy season is more as the conditions are favorable for the proliferation of pathogenic micro-organisms.

Prevalence of SCM on the basis of rearing pattern

In the present study, prevalence of SCM was higher at unorganized farms (13.24%) than at organized farms (8.33%) (Table 1). It might be due to the fact that the farmers could not maintain proper hygiene at animal's house due to non-scientific rearing of animals, while organized farms follow the scientific interventions. The present results are in accordance with Singh *et al.* (2020) who observed 12.86% and 6.89% prevalence of SCM in goats in unorganized and organized sector. The higher prevalence of SCM were reported by Maheshwari *et al.* (2016), Sharma *et al.* (2018) and Mourya *et al.* (2020) as 36.92%, 65.08% and 41.66 % in unorganized farms and 26.59%, 51.82% and 29.82% in organized farms, respectively. The high prevalence may also be due to a number of factors *viz.*, lacks of mastitis control programmes, overcrowding of animals, unhygienic milking practice, rearing pattern and variation in the location of farms.

Prevalence of SCM on the basis of type of housing

In the present study, prevalence of SCM was higher at kutcha housing (14.03%) than at puccka housing (8.70%) (Table 1). Swami *et al.* (2017)reported higher prevalence of SCM in kutcha type (54.94%) than puccka type (27.90%) in cows, similarly 31.81% in kutcha and 26.31% puccka type of housing in buffaloes. It might be due to the fact that the farmer's poor economic status, lack of awareness, poor hygiene, housing, bedding and management practice were responsible for the higher prevalence of SCM.

CONCLUSIONS

The prevalence of SCM was highest in buffaloes of age group between 3-5 years, in descriptive breed, during monsoon or rainy season, unorganized farm and kutcha type of housing. Therefore, it is recommended that development of managemental and clinical practices based on screening of the lactating animals at regular interval would be helpful to control the SCM and prevent the bigger loss in livestock sector.

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