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ORIGINAL ARTICLE

Studies of sub clinical mastitis in buffaloes

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ABSTRACT

In present study, a total 440 quarter milk samples of 110 buffaloes were screened for subclinical mastitis (SCM). Out of these, 76 quarters from 40buffaloes were found positive based on bacterial cultural examination. The animal-wise and quarter-wise occurrence of subclinical mastitis recorded was 36.36 and 17.27 percent, respectively.Age-wise occurrence was highest in the age group of 6-8 years and lowest in the age group of above 12 years both animal and quarter basis. The occurrence of SCM both animal and quarter wise, in relation to lactation number was observed highestduring fifth lactation and lowest in the first lactations and; in relation to lactation stage the occurrence was found highest in mid lactation, followed by early and least during late lactations on quarter as well as animal basis.Based on quarter disposition, occurrence of SCM was highest in right hind quarter followed by right fore. Buffaloes with milk production of more than 8 liters/day were affected more with SCM. In present investigation, a total 440 quarter milk samples of 110 buffaloes were screened for subclinical mastitis (SCM). Out of these, 76 quarters from 40 buffaloes were found positive based on bacterial culture.The mean Hb and TEC values decreased significantly (P<0.01) with a non-significant reduction in PCV and lymphocytes values in SCM affected buffaloes. While, the mean values of TLC and neutrophils increased significantly (P<0.05) in subclinical mastitis affected buffaloes as compared to healthy control. In the present investigation, the mean hemoglobin and total erythrocyte count values were significantly (p<0.01) lowered on day zero among buffaloes affected with subclinical mastitis as comapared with healthy control along with a non significant reduction in the mean values of packed cell volume. The mean total leucocyte count were elevated significantly (p<0.05).

Differential leucocyte count on day zero revealed a significant ($p<0.05$) elevation in the mean counts of neutrophils. with a non significant decrease in the lymphocyte count as comapared with healthy control was noticed in buffaloes affected with SCM.

Key words: Buffaloes, Subclinical mastitis, hematology, Lactation number and Quarter disposition.

INTRODUCTION

Mastitis is an important disease of dairy animals caused by several infectious and non-infectious agents and is characterized by inflammation of parenchyma of the mammary gland with physical, chemical and bacteriological changes in the milk and pathological changes in the glandular tissues (Radostits*et al.,* 2007). High milk yielding cattle were more prone to mastitis when compared to low milk yielding cattle (Kavitha*et al.,* 2009). According to the severity, duration, nature of the exudates and primary cause, mastitis can occur in clinical and subclinical form in buffaloes (Sharma and Sindhu, 2007). It was reported that 14 per cent reduction in milk yield in animals affected with subclinical mastitis (Antanaitis*et al.,*2015). Higher infection rate of subclinical mastitis is found in hindquarters as compared to the fore quarters (Belina*et al.,* 2016). Moreover, subclinical infected udder quarters may develop into clinical mastitis if left untreated.

Subclinical mastitis was observed more frequently and characterized by absence of apparent clinical symptoms, but presence of chemical and bacteriological changes in the milk and often goes unnoticed. In buffaloes, the prevalence of subclinical mastitis is 3-40 times more common than the clinical mastitis and causes huge overall losses in most of the dairy herds (Sharma *et al.,* 2018).

MATERIALS AND METHODS

The present study was carried out on Graded Murrah lactating buffaloes from three different dairy farms and individual holdings located in and around Ibrahimpatnammandal, Ranga Reddy Disrict, Telanganastate during the period from May 2019 to August 2019 were selected. The graded Murrah buffaloes in lactation below three months after calving were taken as in their early lactation, those in between three to six months were taken as in their mid-lactation and above six months were taken as in their late lactation. The graded Murrah buffaloes in very early (<15days post calving) and very late lactation were excluded from the study due to false positive results. The data pertaining to age, breed, lactation number, stage of lactation, parity was collected. The milk samples were collected from a total of 440 quarters of 110 lactating Graded Murrah buffaloes to diagnose subclinical mastitis. Occurrence of SCM was calculated taking into account the milk samples positive for bacterial growth out of total samples screened on animal and quarter basis irrespective of other tests performed. Complete blood picture (CBP): Blood sample was collected from jugular vein of the selected buffaloes. Blood samples were transported to the laboratory within one hour keeping in a thermo flask with ice & then fresh blood was examined for TEC, DLC, Hb, RBC, WBC and PCV%. Hematological parameters like erythrocyte sedimentation rate (ESR), PCV, Hb and RBC of subclinical mastitis affected buffaloes was found lower than the normal buffaloes. In this study the total differential cell count is lower in normal buffaloes than subclinical mastitis buffaloes. Though it was insignificant, but it may be due to nutritional deficiency that occurs in starvation or anorexia that cause neutropenia.

Eosinophil was higher in cows and it was significant. Possible causes of eosinophilia in buffaloes were parasitic infestation. Differences in Basophil were not significant

RESULTS AND DISCUSSION

In the present study, out of 110 buffaloes screened, 40 were diagnosed positive for subclinical mastitis (SCM) based on cultural examination, forming an overall animal wise occurrence of SCM as 36.36% . These findings were in agreement with Sharma *et al.* (2007) and Mir *et al.* (2014), with the occurrence rates of SCM as 32.90 and 30.73 percent respectively.Overall quarter wise occurrence was 17.27% and is in agreement with Sharma *et al.* (2018) with the 15.33% respectively. Age wise occurrence of SCM was highest in buffaloes aged between 6-8 years (44.44%), followed by 9-11 (34.28%), 3-5 (30.00%) and 12 years above (20.00%) on animal basis. Whereas, quarter wise occurrence of SCM was highest in 6-8 years (20.00%), followed by 3-5 years (16.52%) 9-11years (15.83%) and 12 years above (14.00%)Similar findings of occurrence of SCM in the age group of 7-10 years and 5-8 years respectively were reported by Kurjogi*et al.* (2014) and Rady*etal.* (2009). Animal wise occurrence of SCM in relation to lactation number showed highest in fifth (81.82%) lactation followed by second (61.11%), six and above (40.00%), third (32.26%), fourth (30.00%), and least in the first lactations (08.00%) . While, quarter wise occurrence of SCM was found highest in fifth (22.73%)lactation followed by third (21.30%), fourth (16.25%), six and above (15.63%), second (15.48%), and least in first lactation (7.14%), respectively .These findings were in agreement with Kurjogi *et al.* (2014) with the report of highest occurrence of SCM in fifth lactation.

Animal wise occurrence of sub clinical mastitis in relation to lactation stage showedhighest in mid lactation (38.30%), followed by early (37.50%) and least in late lactations (32.26%) respectively. While, quarter wise occurrence of SCM was highest in mid (21.81%) followed by early lactation (16.94%) and least in late lactations (10.94%), respectively These findings were similar with Joshi *et al.* (2006) and Beheshti*et al.* (2011) with the recording of highest occurrence of SCM in mid lactation as (59.49%) and (37.94%), respectively.The occurrence of SCM was highest in right hind quarter (23.64 %) followed by right fore quarter (20.91%), left hind quarter (17.27 %) and left fore quarter (07.27 %)and these results were in accordance withHase*et al.* (2013) with highest occurrence of SCM in right hind, left hind, right fore and left fore quarters. Quarter wise occurrence of subclinical mastitis based on no. of quarters affected was 50.00, 20.00, 20.00 and 10.00 percent in single quarter, two quarters, three quarters and four quarters respectivelyThese results were in accordance with Srinivasan*et al.* (2013) and Langer *et al.* (2014) who also documented highest occurrence of SCM in single quarters lactating animals. Out of 110 buffaloes screened, higher occurrence was observed in buffaloes yielding 8 litres/day followed by 6-8 litres/day and 3-5 litres/day. These results were in accordance with Siddiquee*et al.* (2013) and Kathiria*et al.* (2014) who recorded higher prevalence of SCM in lactating animals producing more than 10 liters per day. The mean hemoglobin values of apparently healthy control and subclinical mastitis affected buffaloes were 12.03±0.56 and 10.05±0.37 g/dl, respectively.

In the present study, there was a significant ($P<0.01$) decrease in the mean Hb values in SCM affected buffaloes as compared to the healthy control buffaloes. The mean total erythrocyte count values of apparently healthy control and subclinical mastitis affected buffaloes were 7.27 ± 0.06 and 06.29 ± 0.17 x 10^6/µl respectively. There was a significant ($P<0.01$) decrease

in the mean values of total erythrocyte count values in SCM affected buffaloes as compared to the healthy control buffaloes. The mean total leukocyte count values of apparently healthy control and subclinical mastitis affected buffaloes were 6.47±0.75 and 07.51±0.42 x 10^3/µl respectively. There was a significant (P<0.05) increase in the total leukocyte count values in SCM affected buffaloes as compared to the healthy control buffaloes. The mean packed cell volume of apparently healthy control and subclinical mastitis affected buffaloes were 25.25 ± 0.26 and 21.06 ± 0.44% respectively. There was a non-significant reduction in the packed cell volume in SCM affected buffaloes as compared to the healthy control buffaloes. The mean neutrophil count of apparently healthy control and subclinical mastitis affected buffaloes were 55.74 ± 0.33 and 64.00 ± 1.47 % respectively. There was a significant (P<0.05) increase in the mean values of neutrophil count in SCM affected buffaloes as compared to the healthy control buffaloes. The mean lymphocyte count values of apparently healthy control and subclinical mastitis affected buffaloes were 60.70±1.52 and 43.31±0.66 % respectively. There was a non-significant reduction in the mean values of lymphocyte count in SCM affected buffaloes as compared to the healthy control buffaloes. One of the report reveal that a significantly (P< 0.05) lower average values of ESR, RBC, WBC, PCV and Hb with higher DLC count like neutrophil and lymphocyte, monocyte and basophil count in SCM infected animals (Siddiqe*et al.,*2015). Also a significant increase in TLC with lower average values of TEC, Hb and PCV among SCM affected animals (Sarvesha*et al.,*2017).

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