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Incidence of bovine mastitis in and around Parbhani

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Abstract
Bovine mastitis is a common disease of dairy cows and buffaloes characterized by physical, chemical, pathological and bacteriological changes in milk and glandular tissues (Samad, 2008). Clinical mastitis is one of the most important diseases in dairy buffaloes. For the mastitis study 129 buffaloes were screened with the help of somatic cell count and strip cup test and 24 animals were found positive for clinical mastitis in buffaloes. Incidence rate of clinical mastitis in buffaloes in and around Parbhani district was 18.60%. Quarter wise incidence of clinical mastitis in buffaloes was found as 5.23%. Age was incidence was found highest in third lactation followed by fourth, fifth, second and first lactation.

Keywords: Mastitis, incidence, buffaloes, Parbhani

Introduction
Mastitis is defined as inflammation of parenchyma of the mammary gland regardless of cause (Radostits *et al*. 2006). Mastitis is one of the important production diseases of dairy animals all over the world, as it causes great economical loss due to lowered milk yield, decreased milk quality and production, increased cost of treatment, labour and discarded milk during infection. Mastitis is responsible for milk having poor quality and upto 70% losses in market value (Ahmed *et al.*, 2008). Mastitis causes an estimated 6053.21 crore in economic losses in India (Dua, 2001) [3]. For cattle and buffaloes, the economic losses due to mastitis per animal are 2182.44 and 1272.36 INR, respectively. Mastitis costs India's dairy industry almost 2.37 billion rupees each year (Lakshmi, 2016) [11]. Clinical mastitis causes losses not just in terms of money, but also in terms of animal health, welfare, and milk quality and quantity. Clinical mastitis causes 50% drop in milk yield, while as subclinical mastitis causes a 17.5 percent drop in milk yield (Shabaz *et al.*, 2020) [18]. Clinical signs of clinical mastitis such as hotness, swelling, painful udder, and severe excretion containing clots and flakes in milk were observed in buffaloes by Khodery and Salama (2008) [9]. El-Naker *et al*. (2015) [4] in buffaloes observed 19.90% prevalence of clinical mastitis and 5.90% for subclinical mastitis. Keeping in view the importance of mastitis in dairy animals the present study was aimed to estimate its incidence in buffaloes of Parbhani district (Maharashtra, India).

Materials and Methods
In the present study lactating buffaloes were screened with the help of strip cup test and the animals showing the signs such as flakes in milk, changes in colour of milk, clots present in milk were selected as having clinical mastitis. Clinical signs shown by animals were inflammation of mammary gland, changes in milk colour and consistency. Somatic cell count was studied as described by Schalm *et al.* (1971) [17]. The incidence was expressed in percent positive by using the following formula.

$$\text{Incidence} = \frac{\text{No of animals positive}}{\text{No of animals tested}} \text{X } 100$$

Results and Discussion
Overall Incidence
Out of the 129 buffaloes screened 24 buffaloes were positive for clinical mastitis revealing an overall incidence of clinical mastitis in and around Parbhani district as 18.60 % (Table 1). Our finding are in agreement with the findings of Chisty *et al*. (2007) and El-Naker *et al.*, (2015) [4]. On the contrary Fukushima *et al.*, (2021) [5] and Prabhu *et al.* (2015) [14] reported overall

incidence of clinical mastitis higher than our findings and Tezera and Ali (2021) [23] and Mbindyo *et al.* (2020) [12] reported overall incidence of clinical mastitis lower than our findings. Shaikh *et al.* (2018) [19] and Shelke *et al.* (2019) [21] observed sub clinical mastitis prevalence of 25.63% and 26.17% respectively of sub clinical mastitis in cows of Parbhani district. Tumbare *et al.*, (2021) [26] found high incidence (65 %) of subclinical mastitis in goats of Parbhani district. Overall incidence of mastitis is shown in Table 1.

Table 1: Incidence of clinical mastitis in buffaloes in and around Parbhani district

Sr. No	Place	No. of animals examined	No of animals positive for clinical mastitis	Percent Incidence
1	VCC COVAS, Parbhani	44	12	27.27%
2	Private Buffalo Farm	43	7	16.28%
3	Veterinary dispensary	42	5	11.90%
Total		129	24	18.60

Age wise incidence

The age wise incidence of clinical mastitis studied in and around Parbhani district is given in Table 2.

From the table it is clear that highest incidence was observed in the age group of 8-9 years (32.14%) followed by age group of 6-7 years (22.22%) and lowest incidence was reported in the age group of 4-5 years (8.33%). The present findings of incidence are in agreement with findings of Kumar *et al.* (2012) [10]. Kurjogi and Kaliwal, (2014) [8] observed that incidence of mastitis in age group 10 was highest followed by 7- 10 years and low in age group of 3-10 years.

Table 2: Age wise incidence of clinical mastitis in buffaloes

Sr. No.	Age (Years)	No of animals screened	No. of animals positive for clinical mastitis	Percent Incidence
1	4-5	24	2	8.33%
2	6-7	45	10	22.22%
3	8-9	28	9	32.14%
4	10 and above	32	3	9.38%
Total		129	24	18.60%

Lactation wise

Lactation wise incidence is given in Table 3.

The lactation wise incidence of clinical mastitis in buffaloes was recorded at different lactation number. The highest incidence observed at the third lactation was (40%) followed by fourth lactation (20%), fifth lactation (13.33%), second lactation (12.5%) and first lactation 10%) respectively.

Chances of clinical mastitis increases with increase in parity number it might be due to as milk production increase gradually from 1st parity onward and richest highest in 4th parity as the milk production increase udder immunity decreases subsequently increase in diameter of teat canal and loosing of its sphincter, the environmental pathogens enter easily and proliferate due decreased udder immunity (Tufani *et al.* 2021) [25].

Table 3: Lactation wise incidence of clinical mastitis in buffaloes

Sr. No.	Lactation no.	Number of buffaloes screened	Number of buffaloes positive	Percent Incidence
1	First	20	2	10.00%
2	Second	24	3	12.50%
3	Third	20	8	40.00%
4	Fourth	35	7	20.00%
5	Fifth	30	4	13.33%
Total		129	24	18.60%

Quarter wise

Quarter wise incidence of mastitis is shown in table 4.

The quarter wise incidence was recorded at fore quarter and hind quarter. The hind quarter showed significantly higher incidence than the fore quarters. The result were similar with Sharma *et al.* (2011) [20], Swami *et al.* (2017) [22], Thakur *et al.* (2021) [24] and Yadav *et al.* (2021).

The higher incidence of clinical mastitis was higher in hind quarter which might be because of high production capacity of hind quarters (Radostits *et al.* 2007) and might be due to larger mass, relatively more closeness to the floor as compared to fore quarters, greater vulnerability to direct trauma hence chances of faecal, urine contamination in hind quarter were highest (Hase *et al.* 2013) [6].

Table 4: Quarter wise incidence of clinical mastitis in buffaloes

Sr. No.	Particular of quarter	Number of quarter examined	Number of quarter positive for mastitis	Quarter infection rate (QIR)
1	Right fore quarter	129	6	4.60 %
2	Right hind quarter	129	8	6.20 %
3	Left fore quarter	129	4	3.10 %
4	Left hind quarter	129	9	6.90 %
Total		516	33	5.23 %

Breed wise

Breed wise incidence of mastitis is shown in Table 5.

The breed wise incidence of clinical mastitis was higher in Jaffarabadi breed *i.e.* 20.00% and in Murrah buffaloes were 18.18 percent. Similar observation was observed by Jingar *et al*. (2014) [7] who observed 22.78% to 32.89% of incidence of mastitis in murrah buffaloes during different parities. The incidence of clinical mastitis in non- descript animals were lower than other breeds. Variation in breed wise incidence might be due to variation in milk production, age of animals, housing system and individual variation of animals.

Table 5: Breed wise incidence of clinical mastitis in buffaloes

Sr. No.	Breed	No of animals examined	No of animals positive for mastitis	Incidence in percent
1	Jaffarabadi	40	8	20.00%
2	Murrah	33	6	18.18%
3	Non- descript	56	10	17.86%
Total		129	24	18.60%

Conclusion

The overall incidence of clinical mastitis in and around Parbhani district was 18.60%. The quarter wise incidence of clinical mastitis was 5.23 percent. The lactation wise incidence was highest during third lactation followed by fourth, fifth, second and first. In breedwise incidence jaffarabadi buffaloes have highest incidence *i.e.* 20% followed by murrah 18.18% and non-descript 17.68%.

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