OCCURRENCE OF SUBCLINICAL MASTITIS IN COWS AND BUFFALOES AT AN ORGANISED FARM

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ABSTRACT

The present study was undertaken to determine the prevalence and etiology of mastitis in crossbred cows and Murrah buffaloes as per the International Dairy Federation (IDF) criteria. Milk samples were collected from 367 functional quarters of 92 apparently healthy lactating crossbred cows and 228 quarters of 57 buffaloes from organized farms located in Hisar. Approximately 20 ml milk samples were collected aseptically from respective quarters and 2 ml milk sample from each was streaked on five per cent sheep blood agar plates and MacConkey's lactose agar plates separately. The resulting bacterial growth media plates were purified and identified at species level as per standard procedures. The somatic cell count (SCC) of milk samples was performed as per method described by Schalm et al. (1971). California mastitis test (CMT) was performed using the modified reagent as per the method described by Doxy (1985). Electrical conductivity test (ECT) of the quarter milk samples was performed by a hand held mastitis detecting milk checker device (Eisai Co. Ltd., Tokyo).
RESULTS AND DISCUSSION

Out of 92 apparently healthy lactating cows, 50 per cent of animals were culturally positive for SCM. The quarter-wise prevalence was found to be 29.42 per cent. A total of 78 isolates of staphylococci and 40 isolates of streptococci were obtained from 367 apparently healthy milk quarters with ten quarters exhibiting mixed infection. Almost similar prevalence was reported by Nagal et al. (1999) and Saluja et al. (2004) and lower prevalence reported by Shoukry and Shabana (1997), Thirunavukarasu and Prabharan (1998) and Lalrinsuanga et al. (2003). However Saxena et al. (1993) and Shaheen (2005) reported higher prevalence of SCM than that recorded in present investigation. Prevalence of SCM on basis of CMT alone was found to be 43.48 per cent animal-wise and 22.07 per cent quarter-wise agreed well with earlier reports (Kirecci and Colak, 2002, Saluja et al., 2004). The findings reported by Ramachandraiah et al. (1990) and Buragohain and Dutta (1991) showed higher prevalence than present study while Dhote et al. (1999) and Sahay et al. (2002) reported lower prevalence on the basis of CMT alone. On the basis of ECT, animal-wise and quarter-wise prevalence was found to be 47.82 per cent and 19.89 per cent and the results were supported by Norberg et al. (2004) while contrary to those of Mansell and Seguya (2003) and Jain (2005) who reported ECT to be the least sensitive test. While considering SCC > 5x10^5/ml of milk alone, 31.52 per cent cows and 11.98 per cent quarters were found positive for SCM. Contrary to this, Tuteja (1999), Sharma and Kapur (2000) and Saxena et al. (2002) reported lower prevalence rate ranging from 3.25 to 23.10 per cent. Saluja (2004) reported almost similar quarter-wise prevalence (31.33%) of SCM on the basis of SCC. The differences in the prevalence rates of SCM as reported by different workers are perhaps due to different managemental and hygienic practices adopted in different dairy herds. According to IDF criteria, 8.71 per cent of cow quarters were found positive however, latent mastitis was recorded in 20.71 per cent quarters and nonspecific mastitis in 3.26 per cent of quarters only. The prevalence of different types of mastitis on the basis of IDF criteria in present investigation was lower than that of reported by Tuteja (1999) and Shaheen (2005) (Table). Out of 228 quarters of 57 buffaloes, the prevalence rate of SCM on the basis of CMT alone was found to 14.03 per cent (animal-wise) and 3.95 per cent (quarter-wise) on the basis of CMT. Results obtained by SCM and ECT indicated 10.53 per cent (animal-wise) and 3.95 per cent (quarter-wise) prevalence which is in concordance as recorded by CMT. Prevalence of SCM in buffaloes on basis of cultural examination was 15.78 per cent, animal-wise and 4.38 per cent quarter-wise. A total of five isolates of streptococci and four isolates of staphylococci were obtained from 228 apparently healthy milk quarters. The prevalence in present investigation was in accordance with that reported by Shaukry and Shabana (1997) and Sharma and Sindhu (2007) while comparatively higher prevalence was reported by Kumar et al. (2007) and Zaki et al. (2008). Following IDF criteria, only two buffalo quarters animals were found positive for sub-clinical mastitis, however latent mastitis was recorded in 3.51 per cent quarters and non-specific mastitis was noticed in 2.19 per cent quarters (Table). This low prevalence of sub-clinical mastitis in buffaloes at organized farm was indicative of adoption of proper hygienic measures.

Table

<table>
<thead>
<tr>
<th>Animal</th>
<th>Animals (No. of animals)</th>
<th>Quarters Animals (No. of quarters)</th>
<th>Quarters showing SCC* &gt; 5x10^5/ml</th>
<th>Quarters showing SCC* &gt; 5x10^5/ml</th>
<th>Quarters showing SCC* &gt; 5x10^5/ml</th>
<th>Quarters showing SCC* &gt; 5x10^5/ml</th>
<th>Quarters showing SCC* &gt; 5x10^5/ml</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cow, 92/367</td>
<td>46 (50)*</td>
<td>108 (29.42)</td>
<td>29 (31.52)</td>
<td>44 (11.98)</td>
<td>32 (8.71)</td>
<td>76 (20.71)</td>
<td>12 (3.26)</td>
</tr>
<tr>
<td>Buffalo, 57/228</td>
<td>9 (15.78)</td>
<td>10 (4.38)</td>
<td>7 (12.28)</td>
<td>7 (3.07)</td>
<td>2 (0.88)</td>
<td>8 (3.51)</td>
<td>5 (2.19)</td>
</tr>
</tbody>
</table>

SCC: Somatic cell count, *Figures in parentheses indicate percentage, 'culturally positive, 'culturally negative'
In this study, prevalence rate of SCM was determined by following IDF criteria which was lower in the same animal population in comparison to that determined by cultural examination or SCC. An increase in SCC values in milk might be due to many factors other than mastitis. Similarly, cultural examination is not fully reliable because only bacteriological examination of milk sample does not necessarily identify all the infected quarters. Therefore, the criteria laid by IDF for the diagnosis of SCM provide a comprehensive picture of prevalence of SCM.

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REFERENCES


