STUDY ON IN VITRO SENSITIVITY OF BACTERIAL CULTURES FROM CLINICAL MASTITIC MILK TO FEW ANTI-BACTERIAL AGENTS

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ABSTRACT

The in vitro antibacterial sensitivity test was done on mastitis milk samples. In in vitro antibiotic drug sensitivity of bacterial cultures from the clinical mastitic samples showed that 80.55 per cent were sensitive to gentamicin, 75 per cent to enrofloxacin, 69.44 per cent to amikacin, 47.22 per cent to oxytetracycline, 44.44 per cent to ofloxacin, 22.22 per cent to amoxicillin and only 11.11 per cent to cefotaxime. Gentamicin and enrofloxacin showed highest in vitro antibiotic drug sensitivity of bacterial cultures from the clinical mastitic milk samples.

Key words: Antibacterials, Bacterial cultures, Clinical mastitic milk, In vitro sensitivity.

INTRODUCTION

Mastitis an inflammation of the parenchyma of the mammary gland regardless of the cause (Radostitis et al., 2000) is characterized by a range of physical and chemical changes in the milk and pathological changes in the glandular tissue. Most important changes in the milk include discoloration, presence of clots and large number of leukocytes. The common etiological agents include contagious pathogens (Staphylococcus aureus, Streptococcus agalactiae, Corynbanerium bovis, Mycoplasma bovis), environmental pathogens (Streptococcus uniberis, Streptococcus dysgalactiae and Streptococcus bovis) and environmental coliforms like gram negative bacteria i.e. E. coli, Klebsiella spp. and Pseudomonas spp. Mastitis recognized as one of the most costly diseases of dairy cows, reduces milk yield by approximately 21 per cent and butter fat by 25 per cent in affected cattle as compared to normal ones (Chakraburti, 2003). It reduces the market value of the animal. In United States, the estimated loss due to sub-clinical mastitis is about two billion dollars annually (Cullor, 1993).

In India, about 50 per cent of the dairy herd population is affected with mastitis (Garg, 2001) leading to estimated losses of about Rs. 6053.21 crores annually (Dua, 2001). Mallikarjunaswamy and Krishnamurthy (1997) reported resistance to antimicrobial, like penicillin, streptomycin and neomycin in in vitro during sensitivity in mastitic samples. In the light of above facts a study was undertaken to know the in vitro antibacterial sensitivity of bacterial cultures from the clinical mastitic milk.

MATERIALS AND METHODS

The present study was conducted in the Division of Veterinary Medicine S.K. UNiv. Agric. & Tech. (K Srinagar, during 2008-09 and milk samples were collected from Teaching Veterinary Clinical Complex and adjoining areas. The mastitic milk from the clinical cases was subjected to in vitro drug sensitivity testing using 7 antimicrobials by disc diffusion method as suggested by Bauer et al. (1966). With the help of a platinum loop, a small amount of sample was inoculated into a nutrient broth medium and incubated for 8-9 hours at 37°C, so as to obtain turbidity. With the help of a sterile cotton swab, the broth cultures were then evenly spread by smearing over the surface of Muller-Hinton agar plates. The antimicrobial discs were placed on the agar and gently pressed. The inoculated plates were kept at low temperature for 3 to 4 hours to allow prediffusion of the antibiotics. These were then incubated at 37°C for 24 hours. The sensitivity was observed on the

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basis of zone size interpretation chart, provided by
the manufacturer. The results were recorded as
sensitive, intermediate and resistant. Different
antibiotics used were gentamicin, amikacin,
ofloxacin, enrofloxacin, oxytetracycline, amoxicillin
and cefotaxime. The most common bacteria isolated
were Staphylococcus spp., Streptococcus spp., E.
coli. and Pseudomonas spp.

RESULTS AND DISCUSSION

The results of in vitro antimicrobial sensitivity
of bacterial isolates from the clinical mastitic samples
showed that 80.55 per cent were sensitive to
gentamicin, 75 per cent to enrofloxacin, 69.44 per
cent to amikacin, 47.22 per cent to oxytetracycline,
44.44 per cent to ofloxacin, 22.22 per cent to
amoxicillin and only 11.11 per cent to cefotaxime
(Table 1).

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<table>
<thead>
<tr>
<th>Antibiotic Used</th>
<th>In vitro sensitivity percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gentamicin</td>
<td>80.55</td>
</tr>
<tr>
<td>Enrofloxacin</td>
<td>75.00</td>
</tr>
<tr>
<td>Amikacin</td>
<td>69.44</td>
</tr>
<tr>
<td>Oxytetracycline</td>
<td>47.22</td>
</tr>
<tr>
<td>Ofloxacin</td>
<td>44.44</td>
</tr>
<tr>
<td>Amoxicillin</td>
<td>22.22</td>
</tr>
<tr>
<td>Cefotaxime</td>
<td>11.11</td>
</tr>
</tbody>
</table>

In Conclusion, gentamicin and enrofloxacin showed highest in vitro antibiotic drug sensitivity of bacterial cultures from the clinical mastitic milk samples. The high in vitro sensitivity to gentamicin and enrofloxacin may be ascribed to less resistance to these antibiotics because of their recent introduction in the therapy of clinical mastitis. These drugs have also got a broad spectrum activity against both gram positive and gram negative bacteria.

REFERENCES


