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Antimicrobial sensitivity pattern of bacterial isolates from Buffaloe affected with postpartum metritis

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ABSTRACT

Isolation and identification of bacterial isolates from uterine discharge of 40 postpartum Murrah buffaloes affected with metritis revealed Corynebacterium (40%) as a major isolate followed by *E. coli* (32.5%), Staphylococcus (27.5%), Streptococcus (25%), Pseudomonas (7.5%), Proteus (5%) and Bacillus (5%). Antimicrobial test showed maximum sensitivity to ciprofloxacin (82.45%) and oxytetracycline (78.94%) followed by gentamycin (73.94%), choramphenicol (66.66%), cephalexin (50.87%), metronidazole (19.29%) and nitrofurazone (15.78%).

Key words : Antimicrobial, Bacterial isolates, Buffaloes, Metritis, Postpartum

Postpartum metritis is one of the most important reproductive disorders in dairy animals including buffaloes throughout the world (Kodagali *et al.* 1980). Commonly employed husbandry and sanitation practices in management of dairy animals at parturition are inadequate and expose uterus to a wide range of bacterial contamination. Uterine bacterial ecology and endocrine status during postpartum period affect this condition and lead to reduced reproductive ability by increasing calving interval, increase in number of services per conception and decreased milk production. For the effective treatment of uterine infections and to prevent the development of drug resistance it is necessary to perform *in vitro* antimicrobial sensitivity test in the isolates (Gupte and Deopurkar 1993). In perspective, present study was designed to isolate and identify the bacterial flora in metritis affected buffaloes and to study their pattern of antimicrobial resistance.

Present study was carried out on Murrah buffaloes (n=40) during postpartum period of 2nd to 5th lactation at different dairy farms in near by area of Durg and Bhilai. Diagnosis of postpartum metritis was done on the basis of history, gynaecological examination and clinical symptoms. After proper restraining of the animals the external genitalia and perineal region was cleaned and dried. Uterine discharge was collected in sterile tube directly while per rectal manipulation of uterus. Isolation of bacteria was done by using dehydrated bacteriological media *viz.* nutrient broth, nutrient agar, blood agar and Mac Conkey's agar (Hi-Media Laboratories Pvt. Ltd., Mumbai India). All the media were prepared as per manufacturer's instructions and were tested negative for sterility. Identification of bacterial isolates was done on the basis of morphology, staining characters and important cultural and biochemical characters (Cater 1984).

Antibiotic sensitivity test of the bacterial isolates was carried out by single disc diffusion method (Bauer *et al.* 1966) using commercially available discs (Hi-Media Laboratories Pvt. Ltd., Mumbai India).

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The isolates were considered sensitive or resistant as per the standard inhibition zone (s) described by the manufacturer.

Bacteriological examination of uterine discharge from all the 40 postpartum buffaloes revealed bacterial isolates. Other workers (Venkateshwarlu *et al.* 1983, Steffan *et al.* 1984, Goswami *et al.* 1992, Rao and Seshagiri , 1997 and Rao *et al.* 2001) have also reported 100 percent positive samples for bacterial isolates. However Mulei and Gitau (1993) and Singh *et el.* (1994) have reported 78.26 % and 93.33% of metritis samples positive for bacterial growth.

The present investigation revealed the occurrence of *Corynebacterium spp.* (40%) as a major isolate followed by *E. coli* (32.5%), *Staphylococcus spp.* (27.5%), *Streptococcus spp.* (25%), *Pseudomonas spp.* (7.5%), *Proteus spp.* (5%) and *Bacillus spp.* (5%) as depicted in Table 1. The finding of highest incidence of *Corynebacterium spp.* (40%) is in close approximation with the findings of Coulson (1978)., Steffan *et al.* (1984), Morrow (1986), Takacs *et al.* (1990), Mulei and Gitau (1993), Singh *et al.* (1994), Rutter *et al.* (1999), Ingawale *et al* .(2003) and Prasad *et al* (2003).

Table 1. Bacterial isolates from uterine discharge of postpartum metritic buffaloes and their drug sensitivity pattern

Bacterial isolates	Number of isolates	No. of isolates sensitive							Percent isolation
		Cf	O	G	C	Cp	Mt	Nr	
Corynebacterium spp.	16	15	16	9	12	8	4	3	40
E. coli	13	10	8	12	8	3	-	2	32.5
Staphylococcus spp.	11	10	9	8	6	7	2	2	27.5
Streptococcus spp.	10	5	7	8	7	9	4	2	25
Pseudomonas spp.	3	3	2	2	2	1	-	-	7.5
Proteus spp.	2	2	1	2	2	-	-	-	5
Bacillus spp.	2	2	2	1	1	1	1	-	5
Total (Single + Mixed)	57	47	45	42	38	29	11	9	-
Percent		82.45	78.94	73.68	66.66	50.78	19.29	15.78	

Cf- ciprofloxacin; O- oxytetracycline; G- gentamycin; C- chloramphenicol;
Cp – cephalexin; Mt- metronidazole; Nr- nitrofurazone.

However, different workers Rao *et al.* (2001) and Chandrakar *et al.* (2002) have reported higher percentage of *Staphylococcus spp.*, while Ambrose and Pattabiraman (1993) and Singh *et al.* (1994) reported higher percentage of *E.coli* . *Streptococcus spp.* has been reported as a major isolate by Hussain *et al.* (1990) and Takacs *et al.* (1990).

Antibiogram revealed that ciprofloxacin (82.45%) and oxytetracycline (78.94%) were the most effective drugs against different bacterial isolates. The sensitivity for gentamycin, chloramphenicol, cephalaxin, metronidazole and nitrofurazone was 73.68%, 66.66%, 50.87%, 19.29% and 15.78%, respectively (Table 1).The results are in corroboration with the finding of Ingawale *et al.* (2003).The findings of present study regarding sensitivity of oxytetracycline have also been reported by Murty and Rao (1978), Ambrose and Pattabiraman (1993) and Mulei and Gitau (1993). Maximum sensitivity to

gentamycin has been reported by Mohanty *et al.* (1992), Singh *et al.* (1994) and Rao *et al.* (2001). Whereas, higher sensitivity to chloramphenicol has been reported by Steffan *et al.* (1984), Goswami *et al.* (1992), Rao and Seshagiri (1997) and Chandrakar *et al.* (2002). The variation in these results might be due to difference in the sensitivity pattern of bacterial isolates.

It can be concluded from the present study that corynaebacterium was the major bacterial isolate in the uterine discharge of postpartum buffaloes with metritis and the bacterial isolates showed maximum sensitivity to ciprofloxacin and oxytetracycline.

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