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Antibiogram of bacteria isolated from the peritoneal fluid of uterine torsion affected buffaloes

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ABSTRACT

The present study was conducted to isolate bacteria from peritoneal fluid of buffaloes suffering from uterine torsion and determine sensitivity pattern to 16 commonly used antimicrobials. The peritoneal fluid from 15 buffaloes suffering from uterine torsion was collected aseptically, and was processed for bacterial isolation and in-vitro antibiotic sensitivity test using standard disc diffusion technique. The *Pseudomonas spp* (n=4) and *Staph. aureus* (n=4) were the most predominant bacteria isolated from the peritoneal fluid followed by *Staph.epidermicus* (n=3). Most of the isolates were sensitive to Gentamicin (93.33%), followed by Furandantin (80%), Chloramphenicol (73.34%), Furazolidone (66.67%), whereas more than half the isolates (n=8) were resistant to Kanamycin (53.34%), Streptomycin (60%), Cephaloridine (66.66%), Co-Trimoxazole (53.34%) and Nalidixic Acid (53.34%) and all the isolates were resistant to Pencillin–G. This study indicates the presence of bacterial infection in the peritoneal fluid of buffaloes suffering from uterine torsion and that culture and sensitivity of peritoneal fluid should be carried out for rational treatment of peritonitis in such animals.

Key words: Buffalo, Peritoneal fluid, Bacterial isolates.

Uterine torsion is the major cause of dystocia in buffaloes (68.38%; Singla, 1988) and is often associated with peritonitis (Brar *et al*., 2006). Uterine torsion, a complication of early second stage of parturition, involves the rotation of gravid uterus along its longitudinal axis, thereby stretching the broad ligaments.

Since broad ligaments are the extensions of the peritoneum, their stretching damages peritoneum leading to peritonitis. In delayed cases of uterine torsion, bacteria can travel to peritoneal fluid through hematogenous route or direct diapedesis/seepage from the uterus (Brar *et al*., 2006) thereby warranting the intra-peritoneal antibiotic treatment to such animals. The indiscriminate use of antibiotics not only causes economic loss to the farmer but also leads to development of resistance in bacteria against antibiotics. The present study was undertaken to investigate the types of aerobic bacteria and their antibiotic sensitivity pattern present in the peritoneal fluid of buffaloes suffering from uterine torsion for the rational use of antibiotics in such cases.

The peritoneal fluid from 15 buffaloes suffering from uterine torsion was collected aseptically, by pricking an 18 G, 3 hypodermic needle on or around linea alba near umbilicus. The buffaloes had completed their gestation periods and were diagnosed to have uterine torsion of 180° to 360°. Per-rectal palpation of genitalia revealed that the uterus in each buffalo was apparently free from adhesions with its surrounding organs. The torsion in each case was relieved by rolling the dam for three to four times using Sharma's modification of Schaffers method (Singh and Nanda, 1996) and per-vaginal delivery of the calf was achieved.

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The fluid was processed for bacterial isolation immediately (Carter, 1990) and isolates were subjected to in-vitro antibiotic sensitivity test as per the standard disc diffusion technique described by Bauer *et al.* (1966). Sixteen different antimicrobials were used *i. e.* Gentamicin (10 mcg), Furandantin (300 mcg), Chloramphenical (30 mcg), Furazolidone (50mcg), Bacitracin (10 units), Streptomycin (10 mcg), Kanamycin (30 mcg), Cephaloridine (30 mcg), Co-Trimoxazole (25 mcg), Nalidixic acid (30 mcg), Ampicillin (10mcg), Oxytetracycline (30 mcg), Tetracycline (30 mcg), Penicillin-G (10 units), Polymyxin-B (300 units) and Chlortetracycline (30 mcg).

The *Pseudomonas spp.* (n=4) and *Staph. aureus* (n=4) were the most predominant bacteria isolated from the peritoneal fluid and *Staph. epidermicus* (n=3) was the next prevalent bacteria. *Salmonella spp.*, *E. coli*, *Micrococcus spp.* and *Streptococcus spp.* were isolated from one case each.

Singh (1996) also reported *Pseudomonas aerugenosa* to be the most prevalent bacteria in the peritoneal fluid of caesarian section operated buffaloes along with *E. coli* and *Staph. aureus*. *Corynebacterium pyogenes*, *E. coli* and *Actinomyces* were isolated from the peritoneal fluid of cattle suffering from clinical peritonitis (Wilson *et al.*, 1985). Bhokre *et al.* (1988) isolated *E. coli*, *Staphylococcus* and *Streptococcus spp.* from the peritoneal fluid of calves in which peritonitis was induced experimentally by strangulation of bowl.

The antibiotic sensitivity of different bacterial isolates from the peritoneal fluid is presented in Table 1. The bacterial isolates were most commonly sensitive to Gentamicin (93.33%), followed by Furandantin (80%), Chloramphenicol (73.34%), Furazolidone (66.67%) whereas more than half the isolates (n=8) were resistant to Kanamycin (53.34%), Streptomycin (60%), Cephaloridine (66.66%), Co-Trimoxazole (53.34%) and Nalidixic acid (53.34%) and all the isolates were resistant to Penicillin–G (Table 1).

The sensitivity of isolates in the present study is nearly similar as Bhokre *et al.* (1988) observed in which all peritoneal fluid isolates of experimentally induced peritonitis in buffalo calves were sensitive to Gentamicin with almost similar sensitivity to Soframycin and Neomycin but had broad spectrum of complete resistance to Penicillin, Ampicillin and Streptomycin, with little sensitivity to Tetracycline, Chlortetracycline and Oxytetracycline. However, the individual sensitivity and resistance pattern of the common bacteria isolated in the two studies varied.

In another study (Singh, 1996) peritoneal fluid isolates from caesarean operated buffaloes were observed to be most sensitive (100%) to Gentamicin, Nitrofurantoin and Cephalexin and resistant to Penicillin, Ampicillin and Co-Trimoxazole.

The total type of bacteria isolated from the peritoneal fluid and their antibiotic sensitivity pattern in clinical peritonitis cases (primarily affected with dystocia or uterine torsion or caesarean operated) or in the experimentally induced peritonitis cases varies but isolates remain most sensitive to Gentamicin. Therefore, it can be indicated that intra-peritoneal infusion of antibiotic particularly Gentamicin in dystocia or uterine torsion affected animals would greatly reduce the chances of peritonitis and further systemic illness and therefore can help to save the future reproductive life of animal.

In conclusion, this study indicates the presence of bacterial infection in the peritoneal fluid of buffaloes suffering from uterine torsion and that culture and sensitivity of peritoneal fluid should be carried out for rational treatment of peritonitis in such animals.

Table1.Antibiogram of different bacteria isolated from the peritoneal fluid of uterine torsion affected buffaloes.

S. No.	Antimicrobial	Number of sensitive isolates	Number of resistant isolates	*Pseudomonas spp*		*Staph. aureus*		*Staph. epidermicus*		*Salmonella spp.*		*E. coli*		*Micrococcus spp.*		*Streptococcus spp.*	
				S %	R %	S %	R %	S %	R %	S %	R %	S %	R %	S %	R %	S %	R %
1	Gentamicin	14 (93.33%)	1 (6.67%)	100	-	100	-	66	33	100	-	100	-	100	-	100	-
2	Furandantin	12 (80%)	3 (20%)	100	-	100	-	66	33	100	-	100	-	-	100	-	100
3	Chloramphenicol	11 (73.34%)	4 (26.66%)	50	50	100	-	66	33	100	-	100	-	100	-	-	100
4	Furazolidone	10 (66.67%)	5 (33.33%)	50	50	100	-	66	33	100	-	100	-	-	100	-	100
5	Bacitracin	8 (53.34%)	7 (46.66%)	50	50	75	25	33	66	100	-	100	-	-	100	-	100
6	Streptomycin	6 (40%)	9 (60%)	-	100	100	-	33	66	-	100	-	100	100	-	-	100
7	Kanamycin	7 (46.66%)	8 (53.34%)	25	75	100	-	33	66	-	100	100	-	-	100	-	100
8	Cephaloridine	5 (33.34%)	10 (66.66%)	-	100	75	25	66	33	-	100	-	100	-	100	-	100
9	Co-Trimoxazole	7 (46.66%)	8 (53.34%)	25	75	100	-	33	66	-	100	100	-	-	100	-	100
10	Nalidixic acid	7 (48.66%)	8 (53.34%)	-	100	75	25	33	66	100	-	100	-	100	-	-	100
11	Ampicillin	2 (13.34%)	13 (86.66%)	-	100	50	50	-	100	-	100	-	100	-	100	-	100
12	Oxytetracycline	1 (6.67%)	14 (93.33%)	-	100	-	100	-	100	100	-	-	100	-	100	-	100
13	Tetracycline	3 (20%)	12 (80%)	25	75	50	50	-	100	-	100	-	100	-	100	-	100
10	Penicillin-G	-	15 (100%)	-	100	-	100	-	100	-	100	-	100	-	100	-	100
15	Polymyxin-B	2 (13.34%)	13 (86.66%)	25	75	-	100	33	66	100	-	-	100	-	100	-	100
16	Chlortetracycline	3 (20%)	12 (80%)	-	100	-	100	33	66	100	-	100	-	-	100	-	100

S = Sensitive R = resistant

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ISSAR NEWS

At a general body meeting of J & K Chapter of ISSAR, on 23.08.07 in Seminar Hall of F. V. Sc & AH, SKUAST-K, Shuhama, Srinagar election of the executive body of J&K chapter was held under the chairmanship of President ISSAR Dr. S. K. Gupta. The office bearers elected were as follows.

President	:	Dr. G.M. Wani
Secretary	:	Dr. Sudarshan Kumar
Treasurer	:	Dr. R. Islam
Executive Members	:	Dr. P. Goswami, Dr. Duri Shawar, Dr. A. K. Srivastava, Dr. M. A. Kirmani, Dr. Ehtisam,

About 22 new Life Members of ISSAR were enrolled on the spot. A total of twenty five veterinary hospitals of Kashmir division, Govt of J&K have enrolled as annual subscriber of IJAR for the year 2007.

ISSAR congratulates all the newly elected Executive office bearers of J&K ISSAR Chapter and awaits a progressive development in period ahead.

President ISSAR