

Studies on uterine microbial isolates from endometric crossbred cows with reference to antibiogram, treatment and conception rate

K. KUSUM¹, G.P. ROY², V.KUNJ³, R.K. ASTHANA⁴ AND M.H. AKHTAR⁵

Department of Animal Reproduction Gynaecology and Obstetrics
Bihar Veterinary College, Patna - 800 014
drkaushal_ar@yahoo.co.in

ABSTRACT

Abnormal parturition commonly leads to endometritis in crossbred cows. The husbandry and sanitation practices commonly used in the management of dairy crossbred cows during parturition are inadequate and expose the items to a broad range of bacterial agents resulting in increased incidence of endometritis in crossbred cows. The study was conducted to know the antibiogram pattern of endometric cows in field condition.

Key word: Microbial isolates, Endometritis, Crossbred cows, Conception rate

Out of 63 crossbred cows (43 H-F and 20 Jersey cross) affected with endometritis, 54 (85.72%) were found positive for the single bacterial or fungal isolates and 9 (14.28%) were found positive for mixed types of isolates (each containing two bacterial isolates). Thus out of 72 isolates (54 from single and 18 from mixed) 69 were bacterial isolates and 3 were fungal isolates. The pattern of antibiogram revealed that the highest number of isolates were sensitive to Enrofloxacin (75.36%), followed by Gentamicin (65.21%) and Cephalexin (52.17%). The overall conception rate was as observed in the present study using Enrofloxacin, Cephalexin, Gentamicin and Lugal's solution were 78.57%, 66%, 55% and 33.33%, respectively.

Studies were conducted on crossbred cows presented at the Veterinary College, Patna and from organized Khatalas around Patna. Crossbred cows affected with endometritis were selected in the present study. Endometritis was diagnosed based on history and gynecological examination. The antibiogram of uterine samples from

endometritis should essentially be carried out for effective and economic treatment in field condition. Thus, isolation, identification and determination of drug sensitivity of the causative organism has become important for effective therapy of gynaecological infection and to limit the development of drug resistant strain (Gupta and Deopurkar, 1993; Prasad, 1998). Therefore, the present investigation was carried out to study the effect of different treatment on conception rate in animals suffering from endometritis.

Uterine samples from 63 endometritic crossbreds cows were collected from clinical complex at Bihar Veterinary College and organized Khatalas around Patna. All the samples were collected under strict antiseptic condition and were transported to the laboratory in ice. The samples were processed for bacterial isolates and antibiogram as per the disc diffusion method of Bauer *et. al.* (1966). The organisms isolated were tested against their antimicrobial agents *viz.* Cephalexin, Gentamicin, Enrofloxacin obtained from Hi-Media, Mumbai. The pure colony obtained from the sample was inoculated in a nutrient broth tube and incubated at 37°C for 6-8 hours to obtain growth in log phase. The content of the incubated tube was poured on nutrient agar

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plate and thoroughly spread over the entire plate to prepare lawn and excess fluid was discarded. The plate was allowed to dry in incubator for 10 minutes. Then antibiotic discs were placed on the plates according to symbol marked on bottom of the plate. The plates were incubated at 37°C for 24 hours. The zone of inhibition was noted thereafter. In case of mixed culture, isolates were used separately for the antibiogram after obtaining its single form. The result of the sensitivity was explained on the basis of the size of the zone of inhibition.

The samples collected were taken for isolation and identification of various micro-organisms. Out of 63 samples, 60 samples were positive for the presence of bacteria and rest 3 for fungi. Out of 63 samples 54 (85.72%) yielded single bacterial or fungal isolates, whereas the remaining 9 (14.28%) samples yielded the mixed bacterial isolates. Only two types of bacterial isolates were present in mixed infection. The present result is in agreement with the findings of Rao et al. (2001) where single and mixed types of bacterial isolates were found. It is evident from the result that the highest percentage of isolates (42.86%) were of *Escherichia coli*. The other organism obtained were *Staphylococcus aureus*, *Streptococcus pyogenes*, *Proteus vulgaris*, *Corynebacterium pyogenes*, *Pseudomonas aeruginosa* and *Candida albicans*. The occurrence of higher percentage of *Escherichia coli* and *Streptococcus* may be due to invasion of organism to uterus through opened cervix as *Escherichia coli* is the normal inhabitant of gastro-intestinal

tract having invasive properties (Laing, 1961). The bacterial invasion coincides with the increasing amount of lochia which together with the intrauterine temperature and pH, create suitable environment for bacterial multiplication. Most of these bacteria are enteric Gram negative rods (specially *E. coli*) and *streptococcus*. Highest incidence of *Escherichia coli* is in agreement with the findings of Kusum et al. (2003) and Ramprabhu (2006). *Staphylococcus aureus* was found in 30.16% of the samples which is the second highest in the present investigation.

Streptococcus pyogenes was present in 14.28% of the total samples which is supported by Singh (1997) and Prasad (1998). *Proteus vulgaris* were isolated from 9.52% of the uterine samples. Which is in agreement with the finding of Singh (1997) and Kumar (1997). *Corynebacterium pyogenes* and *Pseudomonas aeruginosa* were present in 6.35% each, of the total samples which is less than the finding of Singh (1997). Out of 63 samples, 3 (4.76%) samples were found negative for bacterial growth but yielded *Candida albicans*, has been presented in table 1.

The pattern of antibiogram revealed that the highest numbers of isolates were sensitive to Enrofloxacin (75.36%), followed by Gentamicin (65.21%) and Cephalexin (52.17%). The overall conception rate using Enrofloxacin, Cephalexin, Gentamycin and Lugol's solution was 78.57%, 66%, 55% and 33.33% found respectively. Various authors have reported highly varying profile of antibiotic sensitivity pattern of uterine bacterial isolate (Prasad,

Table 1 : No. of isolates obtained from uterine samples of crossbred cows suffering from endometritis

No of sample	No of Single	No of mixed	Name of organism	Sample with single isolate (no.)	Sample with mixed isolate (no.)	Total no. of isolates both from single and mixed	
						Number	%
			<i>Escherichia coli</i>	21	6	27	42.86
			<i>Staphylococcus aureus</i>	12	7	19	30.16
			<i>Streptococcus pyogenes</i>	7	2	9	14.28
			<i>Proteus vulgaris</i>	4	2	6	9.52
			<i>Corynebacterium pyogenes</i>	4	-	4	6.35
			<i>Pseudomonas aeruginosa</i>	3	1	4	6.35
			<i>Candida albicans</i>	3	-	3	4.56
63	54	9		54	18	72	

1998 and Anjaneyalu *et. al.*, 1999).

Misra *et. al.* (1999) observed conception rate in buffalo with Enrofloxacin as 83.33%. On the other hand, Singh *et. al.* (2001) reported higher conception rate with Cephalexin (69.23%) followed by Gentamicin (63.15%). From the present study, it can be assumed that treatment with Enrofloxacin, Cephalexin and Gentimicin may be the choice of drugs and accordingly may be used in treating cases for better conception.

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REFERENCES

- Anjaneyalu, Y., Wilson, J. and Jannes, R.M. (1999). Antibioigram in bovine endometritis. A field Study. *Indian Vet. J.*, 76: 351-52.
- Bauer, A.W., Sherris, S.C. and Turk, M. (1968). Antibiotic subceptibility testing by a standarized single disc method. *Am. J. Clin. Path.*, 45: 493.
- Gupta, A.G. and Deopurkar, R.L. (1993). Microbiological study of gynaecological infection in cattle. *Indian J. Anim. Reproduction*, 14: 118-119.
- Kumar, R. (1997). Studies on bacterial etiology and therapy of repeat breeder cattle and buffaloes. M.V.Sc. Thesis submitted in the faculty of Veterinary Sci., R.A.U., Bihar.
- Kusum, K., Roy, G.P., Akhter, M.H. and Singh, A.P. (2003). Microbiol status and antibiogram of the uterine isolates in enometric crossbred cows. *Indian J. Anim. Sci.*, 73: 1039-1040.
- Laing (1961). Infection and fertility Proc. 4th Int. Cong. Anima. Reprod., 54-69.
- Misra, U.K., Agrawal, R.G., Shrivastava, A.B., Pandit, R.K. and Shrivastava, O.P. (1999). Exfoliative vaginal cell during the cervico-vaginal prolapse and its recovery in murrha buffaloes. Proc. and Abst. XV Annual Convension of ISSAR, 10-12 Febrary, 1999, P.A.U., Ludhiana.
- Prasad, S. (1998). Studies on post-partum metritis in cows with special reference to its therapy and conception rate, M.V.Sc. thesis submitted to the faculty of Vet. Sci., R.A.U., Bihar.
- Ramprabhu, R., Rajeshwar, J.J., Padmanaban and Avadayappan (2006). Comparative antibiogram and clinical efficacy of neomyin in bovine geiter infection, *Indian J. Anim. Reprod.*, 27: 98-99.
- Rao, Y.S., Naidu, K.V., Kumar, P.R. and Reddy, T.V. (2001). Microbial flora antibiogram pattern of the uterine isolates from crossbred cows with endometritis. *Indian Vet. J.*, 22: 54-56.
- Singh, A.H. (1997). Studies on endometritis in cows and buffaloes with special reference to its treatment and conception, rate, M.V.Sc. theiss submitted to the faculty of Vety. Sci. R.A.U., Bihar.
- Singh, A.K., Prasad, K.M., Akhtar, M.H., Singh, R.B., Singh, A.P., Roy, G.P. and Verma, S.B. (2001). Effecacy of treatment of endometritis with chemotherapeutic agent in cows and buffaloes. *Indian J. Anim. Reprod.*, 22: 57-59.