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ISOLATION, IDENTIFICATION AND ANTIBIOTIC SENSITIVITY PATTERN OF MICROORGANISMS CAUSING ENDOMETRITIS IN CATTLE*

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Uterine affections of cows inflicts greater loss on dairy stock owners than do the affections of all other organs put together. Albrechtsen, (1917) emphasized that the chief cause of infertility in cows was endometritis produced by bacterial infections. Namboodiripadd *et al.* (1976) reported that the infections of the uterus with non-specific organism constituted 63.14 per cent. Non-specific organisms cause infertility either by invasion of the tissues or by the production of metabolic byproducts, which are irritating and responsible for local tissue reaction preventing pregnancy (Hardenbrook, 1958).

Materials and methods

The study was carried out on cows and heifers brought to Artificial Insemination Centre, attached to the Department of Animal Reproduction and animals maintained at University Livestock Farm, College of Veterinary and Animal Sciences, Mannuthy, during the period from 1st April, 1991 to 31st July, 1992. Uterine discharge from animals suffering from clinical endometritis was aseptically collected by an instrument newly fabricated for the purpose. Samples collected were transferred into testtubes containing peptone water (Cowan, 1974). A portion of the sample was taken into a sterile vial for isolation of organisms. It was then incubated at 37°C for 5-7 hours. Isolation and identification of organisms were attempted with 30 samples. Each sample was incubated on Muller-Hinton Agar[1]/Tryptic Soy Agar[2] and isolates were subjected to various bacteriological tests and identified as per Cowan (1974). Antibiotic sensitivity tests were carried out on 127 samples. Samples were inoculated on Muller-Hinton agar plates (Barry, 1976) and antibiotic discs of Gentamicin, Chloramphenicol, Co-trimoxazole and Furazolidone were used. After incubation the readings were interpreted as sensitive, intermediate or resistant on the basis of zone interpretative chart.

Results and discussion

The organisms isolated from the samples collected are shown in Table 1. Only single type of bacterial organisms were recorded from each sample. The organisms were coagulase negative Staphylococcus spp. (40.00 per cent), *Staphylococcus aureus* (30.00 per cent), Corynebacterium spp. (16.66 per cent), Bacillus spp. (6.67 per cent) and Pseudomonas spp. (6.67 per cent).

Table 1 Identification of organisms

Sl. No.	Organisms identified	Number	Per cent
1	Coagulase engative Staphylococcus spp.	12	40.00
2	*Staphylococcus urcus*	9	30.00
3	Corynebacterium spp	5	16.66
4	Bacillus spp.	2	6.67
5	Pseudomonas spp.	2	6.67
	Total	30	100.00

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1 Mullar-Hinton agar, Hi-Media Laboratory Pvt. Ltd., Bombay-400 686, India
2 Tryptic Soy Agar, Span Biologicals, 174, New Industrial Estate Udhiana, Surat, India

Table 2 Response to sensitivity tests

Sl. No.	Drugs	Sensitive		Intermediate		Resistant		Total
		No.	%	No.	%	No.	%	
1	Gentamicin	78	61.41	1	0.79	48	37.80	127
2	Chloramphenicol	75	59.05	1	0.79	51	40.16	127
3	Co-trimoxazole	30	23.62	12	9.45	85	66.93	127
4	Furazolidone	59	46.45	1	0.79	67	52.76	127
	Total	242	47.64	15	2.95	251	49.41	508

Results of antibiotic sensitivity tests are presented in Table 2. Out of 127 samples 78 (61.41) were sensitive to Gentamicin, 75 (59.05 per cent) to Chloramphenicol, 59 (46.45 per cent) to Furazolidone and 30 (23.62 per cent) to Co-trimoxazole. Intermediate sensitivity to Co-trimoxazole was seen in isolates from 12 (9.45 per cent) samples.

Among the isolates of coagulase negative staphylococcus spp. 83.40 per cent were sensitive to Gentamicin and 58.30 per cent to Chloramphenicol and Furazolidone and 91.66 per cent resistant to Co-trimoxazole. Percentage of sensitivity shown by *Staphylococcus aureus* was 33.30 to Gentamicin and they were not sensitive to Chloramphenicol, Co-trimoxazole and Furazolidone. Corynebacterium spp. showed cent per cent sensitivity to Chloramphenicol and Furazolidone and 80.00 per cent sensitivity to Gentamicin and 60 per cent to Co-trimoxazole. Isolates of Bacillus were cent per cent sensitive to Gentamicin, Chloramphenicol and Furazolidone. They were not sensitive to Co-trimoxazole. Isolates of Pseudomonas were fully resistant to all the four drugs.

The organisms involved in the present study of endometritis were similar to those identified by earlier workers (Hardenbrook, 1958; Venkateswarlu, 1983a, Malik *et al.*, 1987). Venkateswarlu *et al.* (1983b) recorded similar results with Chloramphenicol showing maximum sensitivity, followed by Gentamicin and Furazolidone. The causative organism might have reached the uterus from vagina at parturition or at oestrus, although it is possible in some circumstances for infection to arrive through circulation.

Summary

Bacterial isolates obtained from 30 samples of uterine discharge with clinical endometritis were coagulase negative staphylococcus spp. (40.00 per cent), *Staphylococcus aureus* (30.00 per cent). Corynebacterium spp. (16.66 per cent). Bacillus spp. (6.67 per cent) and Pseudomonas (6.67 per cent). Only single type of bacterial organisms were recovered from each sample. Out of 127 samples 78 (61.41 per cent) were sensitive to Gentamicin, 75 (59.05 per cent) to Chloramphenicol 59 (46.45 per cent) to Furazolidone and 30 (23.62 per cent) to Co-trimoxazole. Intermediate sensitivity to Co-trimoxazole was seen in isolates from 12 (9.45 per cent) samples.

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References

Albrechtsen, J. (1917). Sterility of cattle and methods of treatment. *Cornell Vet.* 7:7.

Barry, A.L. (1976). *The antimicrobic susceptibility test: Principles and Practices*, Lea and Febiger, Philadelphia, pp. 72-80.

Cowan, S.T. (1974). *Manual for the identification of medical bacteria.* University Printing House, Cambridge, Great Britain, 2nd Edn. pp.1-186.

Hardenbrook, H.Jr. (1958). The diagnosis and treatment of non-specific infection of the bovine uterus and cervix. *J. Am. Vet. Med. Ass.* **132**(11): 459-464.

*Malik, S.Z., Caudhary, M.A., Ahmad, N. and Rehman, N. (1987). Effect of different antibiotics in the treatment of infection in repeat breeding cows in Faisalabad and Toba Tek Singh districts. *Pakistan Vet. J.* **7**(2): 60-61. Cited in Vet. Bull (1988) **58** (9) Abst. 5658.

Namboodiripad, T.R.B., Raja, C.K.S.V. and Abdulla, P.K. (1976). *In vitro* antibiotic susceptibility of isolates from the uterus and the efficacy of intrauterine treatment in repeat breeder cows. *Kerala Vet. J.* **7**(1): 57-61.

Venkateswarlu, T., Krishnaswamy, S. and Rao, A. (1983a). Bacterial flora of endometritis and their *in vitro* sensitivity to antibacterial drugs. *Trop. Vet. Anim. Sci. Res.* Cited in *Vet. Bull.* (1983) 53 (9): Abst. 6014.

Venkateswarlu, T., Rao, A.R. and Krishnaswamy, S. (1983b). Treatment of endometritis in cows and buffaloes based on *in vitro* sensitivity pattern of bacterial isolates. *Indian Vet. J.* **60**(6): 487-489.