

RESEARCH ARTICLE

Management of Non-Specific Genital Infections in Infertile Crossbred Cattle

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ABSTRACT

Among 1046 infertile breedable bovines screened in different sexual health camps in and around Anand district during one year, the prevalence of repeat breeding and genital infection was found to be 17.97 and 17.11 %, respectively. The representative 23 HF crossbred infertile cows from within Anand taluka were selected for cultural examination, antibiotics sensitivity of isolates and accordingly, the treatment and pregnancy follow up. The cultural isolation of CVM/genital discharges from 23 crossbred cows revealed bacterial growth in 65.22 (15) % samples; the Gram +ve *Bacilli Spp.* was prevalent to the highest extent (38.10%; 8) followed by *Corynebacterium Spp.* (23.81%, 5). All the isolates (100 %) were sensitive to enrofloxacin followed by cefotaxime and tetracycline (73.33% each), while they were resistant to tyrosin. Among the culturally positive cases, use of effective drugs resulted in overall three cycles pregnancy rate of 86.66 (13/15) %, while in culturally sterile cases it was 50 (4/8)%, showing the utility of antibiotics sensitivity testing in managing infertile animals.

Keywords: Antibiotic sensitivity, Conception rate, Crossbred cows, Cultural isolation, Infertility, Therapeutic management.

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INTRODUCTION

Good fertility of dairy cows is the key to economically successful dairy farming (Amiridis *et al.*, 2009). It is generally accepted that puerperal disorders have a negative impact on postpartum reproductive performance. Repeat breeding is also considered as one of the most important reproductive disorders in cattle (Yusuf *et al.*, 2010). It is estimated that the uterus of approximately 40 % of cows is still contaminated beyond three weeks postpartum (Sheldon *et al.*, 2008). Improper management, nutritional imbalance, anatomical defects of the genital tract, hormonal disturbances, and endometritis have been recognized to cause repeat breeding in bovines (Kumar *et al.*, 2015). The non-specific genital infections can cause endometritis, metritis and pyometra. These are more common following dystocia, retained placenta, milk fever, etc. Metritis is often associated with uterine atony and persistent purulent vaginal discharge. Endometritis and repeat breeding are associated with lower conception rates, increased intervals from calving to conception, and more culls for failure to conceive (LeBlanc *et al.*, 2002). The most relevant uterine pathogens, *Escherichia coli*, and *Trueperella pyogenes*, are correlated with increased endometrial inflammation and more severe clinical disease (Werner *et al.*, 2012). The therapeutic management of such infectious infertility should ideally be based on cultural isolation of pathogens, their antibiotic sensitivity testing and then use of effective drug for at least 3-5 days. The present study was planned to isolate and identify the microorganism *in vitro* from CVM and/or genital discharge of repeat breeder and clinically infected crossbred cows, manage them with antibiotics sensitivity results and then assess the impact of therapy on fertility.

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MATERIALS AND METHODS

In all 1046, infertile breedable bovines were screened in 16 different sexual health camps in and around Anand district during year 2018-19 to study the prevalence of repeat breeding and genital infection along with other causes in them. Among them, the representative 23 pluriparous Holstein Friesian crossbred cows with repeat breeding/endometritis were specially selected for follow up at farmers' doorstep from within Anand taluka. The CVM/genital discharges were collected aseptically using "syringe and pipette method and were subjected to cultural isolation and routine antibiotics (nine) sensitivity testing (Cruickshank, 1965) to know the type of bacterial isolates causing infertility and their antibiogram. The animals were treated using the antibiotics found sensitive for minimum three to five days by the parenteral route and the response to treatment

was judged by the nature of genital discharge/mucus at subsequent estrus and conception rates from AI. The animals thus treated were bred by AI at the next cycle and were followed for their repetition to estrus and/or for pregnancy examination 60 days post-AI. The pregnancy results were analysed to assess the therapeutic response to treatment.

RESULTS AND DISCUSSION

During one year period, 1046 infertile breedable bovines screened in 16 sexual health camps in and around Anand district revealed the prevalence of repeat breeding and genital infection as 17.97 and 17.11 %, respectively. Bhat *et al.* (2012) recorded overall prevalence of repeat breeding as 28.31 %, while Das *et al.* (2007) recorded incidence of infertility as 27.73 %. It was estimated that even in well managed herds, the incidence of infertility ranged from 15 to 20 per cent, majority of which was due to repeat breeding syndrome (Das *et al.*, 2007).

Out of 23 representative cows' samples studied, 8 (34.78 %) samples did not yield any culture. Amongst the 15 samples (65.22 %) found positive for cultural growth, the Gram +ve *Bacilli Spp.* was found to be prevalent to the highest extent (38.10%; 8). The remaining cultures found in descending order of their occurrence were *Corynebacterium Spp.* (23.81%, 5), Gram -ve rods (19.04%, 4), *Streptococcus Spp.* (14.29%, 3), and Gram +ve rods (4.76%, 1). Among the CVM/ discharge samples studied, 40.00 (6) % samples had mixed cultures, whereas 60.00 (9) % samples had single culture. Sheldon *et al.* (2008) opined that bacterial contamination of the uterine lumen is common in cattle after parturition often leading to infection and uterine disease, the *E. coli* being the major one. The similar findings about the bacterial isolates obtained from purulent vaginal discharge have been reported by Brodzki *et al.* (2014). The present findings were also in agreement with the observations of Gani *et al.* (2008), Mane *et al.* (2009), Joshi *et al.* (2013), Zaman *et al.* (2015) and Raval *et al.* (2018) in repeat breeder cattle, wherein they

reported prevalence of non-specific bacterial agents, *viz.*, mixed growth, *Streptococcus Spp.*, *Staphylococcus Spp.*, gram-positive bacilli, gram-negative bacilli, Gram negative rods, Gram positive rods, *Corynebacterium Spp.*, *Micrococcus Spp.* and Anthracoid bacilli. The findings clearly indicate the role of non-specific microorganisms in causing the genital infections that create hostile uterine environment for the conception as well as implantation of an embryo.

Among the isolates tested for their antibiotic sensitivity spectrum, all the isolates (100%) were found sensitive to enrofloxacin. This was followed in descending order by ceftiofur (73.33%), tetracycline (73.33%), amoxicillin (66.66%), ampicillin (26.66%), penicillin (26.66%), Cefepime (20.00%) and Streptomycin (20.00%), whereas all isolates obtained from these cows were resistant to Tyrosin (Fig. 1). Reddy *et al.* (2012) also found enrofloxacin to be the most sensitive antibiotic (91.67%), followed by Gentamicin (83.33%). However, Sawale *et al.* (2006) and Mane *et al.* (2009) found ciprofloxacin, gentamicin, norfloxacin, chloramphenicol, nitrofurazone and furazolidone to be more sensitive and effective in descending order in repeat breeder cows, while Raval *et al.* (2018) found Gentamicin to be most sensitive and effective in both puerperal infections and repeat breeding in cattle.

The culturally positive 15 cases were treated parenterally for 3-5 days using antibiotics found most effective and were inseminated during subsequent estrus along with other 8 culturally sterile cows and were followed for repeating to estrus and/or pregnancy diagnosis 60 days post-AI. Among the animals having bacterial growth (n = 15) and treated suitably, 69.23 (9), 30.77 (4) and 0 (0) percent cows conceived during their post-treatment 1st, 2nd and 3rd cycles, respectively, with an overall three cycles pregnancy rate of 86.66 (13/15) percent. Whereas among the eight animals having no bacterial growth, 25.00 (2), 12.50 (1), and 12.50 (1) percent cows conceived during their 1st, 2nd and 3rd cycles, respectively, with an overall pregnancy rate of 50.00 (4/8) percent. Raval *et al.* (2018) record very similar results in puerperal infected and repeat breeding crossbred cows with a similar approach. In the present study, the cows remained non-pregnant suggested their repeating to the estrus owing to reasons other than the genital infections.

The present cultural and therapeutic findings because of getting cows pregnant are suggestive of probable prevalence and role of genital infections. Thus, the cultural isolation, AbST, and then the use of effective drug could be a befitting and benefitting approach for resolving the genital infections and restoration of bovine fertility.

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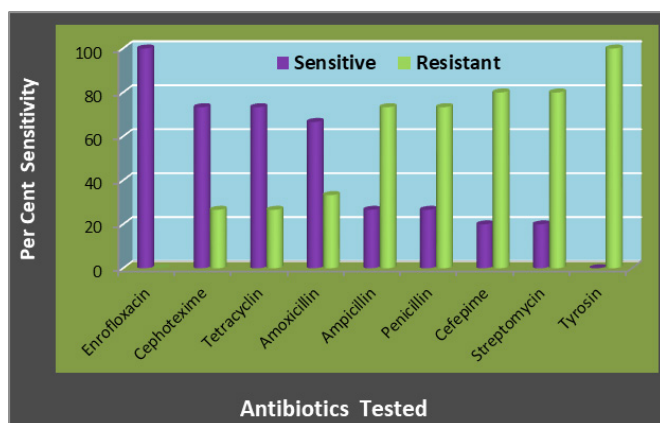


Fig. 1: Antibiotic sensitivity spectrum of bacterial isolates from the genital secretions of repeat breeding/endometriotic crossbred cows

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