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 tyrocin. 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 culs 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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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 cephotexime (73.33%), tetracycline (73.33%), amoxycillin (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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