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Incidence of Transitional Period Reproductive Disorders in Crossbred Cows

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ABSTRACT

The present study was conducted to record the transitional period reproductive disorders in crossbred cows reared in organized farms as well as nearby villages around Palampur, Himachal Pradesh. A total of two hundred seventy eight (N=278) crossbred cows with different parities were studied to record the incidence of reproductive disorders viz., dystocia, metritis, genital prolapse and retained fetal membranes. Overall incidence of transitional period reproductive disorder recorded in current study was 34.9% with highest incidence in dystocia (16.7%) followed by metritis (11.7%), genital prolapse (3.7%) and retained fetal membrane (2.7%), respectively. Adult animals (<7 yrs, 65.9%) were more susceptible for reproductive disorders than older cows (>7yrs, 34.1%; P<0.05). Majority (93.8%) of the affected animals had prolonged postpartum anoestrus and lower conception rates. In conclusion, one-third of the crossbred cows are affected with transitional period reproductive disorders. Therefore, there is a dire need to prevent transitional period reproductive disorders through appropriate management of cows.

Key words: Transition period, Reproductive disorders, Crossbred cows

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INTRODUCTION

Reproductive disorders during the transition phase have become more common in the dairy industry during the last few decades. Transition phase involves a period of 6 weeks i.e., starting from 3 weeks prior to 3 weeks after calving (Cetin *et al.* 2018). Physiological and metabolic alterations are observed when cows move from non-lactating pregnant to lactating non-pregnant conditions. Dairy cows usually fail to adjust to metabolic and management problems leading to high risk for developing infectious, metabolic, and other diseases in the weeks immediately following calving (Mulligan and Doherty, 2008;Singh *et al.* 2015).

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Uterine illnesses are of primary concern in dairy herds and generate large economic losses due to the expense of treatments, infertility, embryo loss, foetal mortality, and involuntary culling (Williams 2013). Metabolic diseases caused by physiological imbalances in cows during the transition period enhance the incidence of puerperal disorders such as metritis and endometritis (Elkjaer *et al.* 2013). Energy and calcium homeostasis changes are associated with an increased risk of metabolic and infectious diseases such as ketosis, fatty liver, displaced abomasum (DA), milk fever, retained placenta (RP), metritis, and mastitis which deleteriously affects reproductive performance, increases services per conception and decreases pregnancy rates (LeBlanc 2010; Williams 2013; Toni *et al.* 2015).

Elevated Betahydroxybutyrate (BHB) levels during early lactation indicate a negative balance, which is allied with increased risk of metritis (Duffield *et al.* 2009) and culling rates (LeBlanc 2010, McArt *et al.* 2013). Metritis has been related with reduced milk production and poor reproductive performance in cows (Giuliodori *et al.* 2013), as well as with dystocia, retained placenta (RP), and decreased BCS (Dubuc *et al.* 2010). Daros *et al* (2017) observed incidence risk of metritis as 11.2%, retained placenta as 13.9% and dystocia as 11.0% in 53 grazing herds whereas within the herd incidence risk was 11.7% for metritis, 13.8% for retained placenta and 14.3% for dystocia. Thus, the transition phase is regarded as a critical phase and henceforth the incidence of various reproductive disorders needs to be recorded.

Briefly, cows with excessive body condition at calving, or excessive weight loss after calving, demonstrate overall decreased reproductive performance and increased likelihood of dystocia, retained placenta, metritis, milk fever, cystic ovaries, lameness, and mastitis as well as metabolic disorders, fatty liver, and ketosis.

MATERIAL AND METHODS

The study was conducted in organized farms (Jersey cattle breeding farm, Palampur, Livestock farm, CSK HPKV Palampur (32.5 N, 76.8 E, altitude 1290.8m) as well as nearby villages. A questionnaire was designed to record the incidence of reproductive disorders encountered during current as well as previous transition period of cow. Participatory field surveys were conducted to highlight the gaps responsible for these maladies. The dairy farm cows were kept under loose housing system along with proper ventilation, free access to water and ad-libitum green and dry fodder depending upon availability during the particular season. Cows at farmers' household were fed a basic diet of seasonal green fodder, wheat straw, and variable quantity of concentrates. Statistical analysis was performed using SPSS statistics version 25.

RESULTS AND DISCUSSIONS

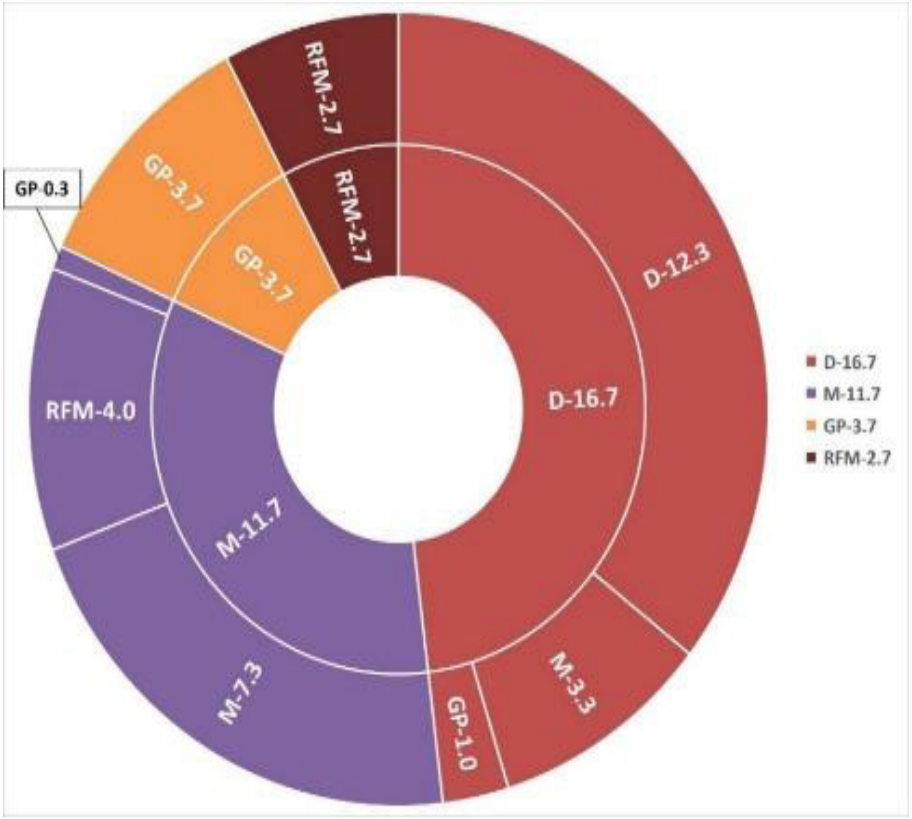
A total of two hundred and seventy eight pretested proformas duly filled in from data collected from organized farms and farmers were analyzed to record the incidence of reproductive disorder during transition period. Overall incidence of transition period reproductive disorders recorded in crossbred dairy cows was 34.9% (n=97/278; Table 1). Various reproductive disorders encountered in present study were dystocia (16.7%) followed by metritis (11.7%), genital prolapse (3.7%) and retention of fetal membranes (2.7 %), respectively (Fig. 1). Significantly higher ($P<0.05$) incidence of reproductive disorders were observed among adult (65.9%), multiparous crossbred cows (56.7%). Prolonged postpartum anestrus duration was observed in majority (93.8%) of affected animals.

The incidence of dystocia was 16.7% which is in consonance to observations of Uzmay *et al.,* 2010 (4-30%) and Abera *et al.* 2017 (0-50%) in heifers. Primiparous animals were more likely to suffer from dystocia followed by 2nd, 3rd and 4th parity which was similar to the earlier findings (Purohit *et al.* 2012). The possible explanation for higher incidence in primiparous cow could be narrower birth canal in these animals. Metritis was recorded in 11.7% crossbred cows in present study, which were slightly lower than earlier observations (15.4%, Chebel 2021). Whereas, quite lower (2.8%, Vallejo-Timaran *et al.* 2021) as well as higher incidence of metritis (30-35%, Sheldon and Dobson 2004) have also been reported in literature. The incidence of genital prolapse (vaginal, cervico-vaginal or uterine) was 3.7% in current study which was slightly higher than earlier reports of Patterson *et al* (1981) (1-2%). Retained fetal membranes were recorded in 2.7% crossbred cows in our study which was quite lower than earlier citation (4-11%, Pinedo *et al.* 2020; 5-15%, Arthur *et al.* 1996).

Significantly higher ($P<0.05$) incidence of reproductive disorders were observed among adult crossbred cows (<7 years, 65.9%) than older cows (>7 years, 34.1%). Higher incidence of reproductive disorders were observed in multiparous animals (parity>2; 56.7%) than primiparous and secundiparous animals. Prolonged postpartum anestrus duration (>2 months) was observed in majority (93.8%) of affected animals in present study. Mineral mixture and calcium supplementations were seldom practiced (24.8% and 29.9%) by one fourth of interviewed farmers during transition period. Lower amount of concentrate (<2.5 kg/day) were fed by majority of farmers' (75.2%) in present study.

Table 1: Reproductive disorders during transition period (N=97).

Parameters	Categories			Chi square	P- value
Age (Yrs.)	Adult (<7 yrs.) 66.0 (64/97)		Old (> 7yrs.) 34.0 (33/97)	8.512	0.004
Parity	0-2 43.3 (42/97)		>2 56.7 (55/97)	2.609	0.067
Postpartum anestrus (months)	Normal (2 m) 6.2 (6/97)		High (> 2 m) 93.8 (91/97)	2.286	0.093
Milk production (kg/day)	< 8 kg/d 84.5(82/97)		>8 kg/d 15.5 (15/97)	0.001	0.550
Feed pattern	Stall 8.2 (8/97)		Mixed 91.8 (89/97)	1.028	0.207
Concentrate feeding	< 2.5 kg/d 75.2 (73/97)		> 2.5 kg/d 24.8 (24/97)	0.196	0.379
Mineral mixture	No 75.2 (73/97)		Yes 24.8 (24/97)	0.815	0.221
Calcium supplementation	No 70.1 (68/97)		Yes 29.9 (29/97)	1.867	0.109
Deworming	No 12.3 (12/97)		Yes 87.7 (85/97)	0.403	0.124
House cleaning	Daily 90.5 (87/97)	Alternate 3.2 (4/97)	3-4 days 6.3 (6/97)	1.562	0.458



(D, Dystocia; M, Metritis; G.P, Genital prolapse; RFM, Retained fetal membranes)

Fig. 1: Sun burst diagram depicting relationship (%) of different reproductive disorders during transition period in crossbred cows (n=97/278)

CONCLUSIONS

In conclusion, one-third of crossbred cows had transitional phase reproductive problems, thus requiring application of preventive strategies to combat these disorders to minimize the culling risk of cows and economic losses to farmers.

CONFLICT OF INTEREST

None

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