

FREEMARTINISM IN DAIRY ANIMALS – AN ANALYSIS OF SIX CASES

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ABSTRACT

Six cases of freemartins presented to the Teaching Veterinary Clinical Service Complex, Sardarkrushinagar were examined and diagnosed. The freemartins are a sterile female born as co-twin to a male calf and rarest cases of this condition are encountered in veterinary practice and hence these six cases are placed on records.

KEY WORDS: Cow, Crossbred, Buffaloes, Freemartins, Co-twin

INTRODUCTION

A freemartin is a sterile female born as a co-twin in cases of heterosexual multiple births including twin births (Bigger and McFeely, 1966). About 92 % of heifers born as co-twin with a heterosexual calf are reported to be sterile (Gilmore, 1953). They have apparently normal external genitalia but modified internal genitalia as a result of vascular anastomosis of the adjacent chorioallantoic sac of heterosexual fetuses (Jub and Sohn, 2001). Diagnosis can be made by observing various signs like presence of tuft of coarse hairs on vulva, measurement of vaginal depth with the help of tube or catheter, evaluation of chromosomal chimerism at an early age and later on rectal palpation and anoestrus behaviour are suggestive of freemartinism. Individuals with ambiguous sex organs or admixture of male and female organs or phenotypic sexual characters opposite to the genetic sex are also found. An incidence of 0.76 % of twinning has been reported in cattle and the incidence is reported to be higher in crossbreds than in Zebu breed of cattle (Yadav et al., 1989). As twin pregnancies are rare feature in cattle and buffaloes, the incidence of twin pregnancy with heterosexual fetus is rarest instance and hence these six cases are placed on records.

Case History and Clinical Examination

Three buffalo heifers aged 5, 6 and 10 years and three crossbred cow heifers aged 3, 2.5 and 3 years were presented separately at college clinics and clinical camps organized in villages around SK Nagar with the history of anoestrus. The heifers were reportedly born as Co-twins to male calves.

On physical examination the heifers were healthy and masculine appearance. Teats and udder were rudimentary. The vulva has a tuft of coarse hairs on ventral commissure in all the cases.

Per vaginal examination of all the heifers revealed persistent hymen. A glass tube could be passed in all the heifers maximum upto 4-5 inches. The vulvar opening was very small and clitoris was prominent.

In per rectal examination the first buffalo heifer revealed cord like vaginal tube with no distinction of cervical ring and uterine horns. Uterus was solid, hard and cord like. Ovaries could not be palpated. The second buffalo heifer examined in a clinical camp revealed cord like uterus and uterine horns. Fallopian tubes were absent. Ovaries were of the size of wheat grain and adhered to bursal musculature. Ovarian bursa was fleshy and muscular. The third buffalo heifer had no cervical rings, no ovaries and uterus was tube like.

In bovines, the first two heifers revealed the absence of cervical rings, uterine body, ovaries and fallopian tubes. The uterine horns hard and cord like and ovarian bursa was fleshy and muscular. In third heifer the cervix was absent, uterus was cord like and ovaries were small seed size.

On the basis of history and clinical examinations the conditions were diagnosed as Freemartinism.

DISCUSSION

In confirmation to our report the freemartin type of intersexuality is mostly reported in past in females born as co-twin with a male calf (De *et al.*, 1996; Sharma *et al.*, 2004; Siddiquee *et al.*, 2005; Siddiquee and Bhatol, 2007).

Freemartins born co-twin with male and their phenotypic variability has been extensively reviewed by many workers in past (Sinha and Jha, 2001; Sharma *et al.*, 2004). In most of the freemartin cases the ovaries are very small usually of the size of flattened barley and usually are undifferentiated. In compliance with these findings the ovaries in the cases recorded in the present study were either very small or were non palpable/ absent. The genitalia in freemartins has been reported to be quite small with rudimentary cervix and horns, vagina is usually undeveloped with vulva appearing normal except a tuft of coarse hairs and occasionally the presence of a large clitoris (De *et al.*, 1996). The above findings are in accordance with the cases recorded in the present investigation. A vast variability in characters ranging from complete absence of gonads and internal genitalia with XX/XY chromosome chimerism (Lojda, 1968; Sharma *et al.*, 2004), hypogonadism, cryptorchidism and segmental aplasia of wolffian duct (Rieck, 1973) to presence of a large corpus luteum with normal tube on left side and ovary on the right side has also been reported in the past (Dunn *et al.*, 1970).

Freemartins are generally sterile and most of the literature available on this clinical condition suggests that culling is the only remedy (Gilmore, 1953; Sharma *et al.*, 2004; Siddiquee and Bhatol, 2007). Exceptions are, however, also on records where heifers born co-twin with male and having chimerism produced progeny (Eldridge, 1985). De *et al.*, (1996) suggested that this may be because of non-virilization of the female reproductive system as the XY cells might have migrated after the development of female system.

Considering bulk of scientific literature suggesting sterility in freemartins, the owners were advised to cull the heifers referred in the present study.

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