



The Indian Journal of Animal Reproduction

The official journal of the Indian Society
for Study of Animal Reproduction

Year 2024, Volume-45, Issue-2 (December)

ISSN 0970-2997 (Print)



ISSN 2583-7583 (Online)

'Freemartin' Like Congenital Anomaly in a Goat Kid (*Capra hircus*)

Soundarapandian Satheshkumar ^{1*}, Subramanian Prakash ¹, Vaiyapuri Prabakaran²

¹Department of Veterinary Gynaecology and Obstetrics, Veterinary College and Research Institute, Orathanadu, Thanjavur

²Department of Veterinary Gynaecology and Obstetrics, Veterinary College and Research Institute, Namakkal Tamilnadu Veterinary and Animal Sciences University Tamil Nadu, India

ABSTRACT

Clinical investigation of a goat kid brought with the history of straining and genital abnormality revealed the presence of an enlarged clitoris and blind-ended vaginal canal. A non-patent uterine horn-like structure and absence of ovaries was confirmed by ultrasonographic investigation. The case was confirmed to be a rare incidence of 'freemartin' like congenital anomaly in a goat kid.

Keywords: Goat Kid, Congenital Anomaly, Freemartin

How To Cite: Satheshkumar, S., Prakash, S., & Prabakaran, V. (2024). 'Freemartin' like congenital anomaly in a goat kid (*Capra hircus*).

The Indian Journal of Animal Reproduction, 45(2),135-137. 10.48165/ijar.2024.45.02.30

INTRODUCTION

Freemartinism is a distinct form of congenital anomaly that arises as a result of a vascular anastomosis of the adjacent chorioallantoic sacs of male and female fetuses in multiple pregnancies (Roberts, 1971). Incidences of freemartinism are usually reported in cattle, but very rarely recorded in goats (Szatkowska *et al.*, 2004, 2014). This communication places on record such a rare incidence of genital anomaly in a goat kid.

CASE HISTORY AND OBSERVATIONS

A five months old non-descriptive goat kid was presented to the Gynaecological unit of Veterinary Clinical Complex,

Veterinary College and Research Institute, Orathanadu with the history of straining during urination for the past one week and protrusion of an enlarged structure through the vulval opening during straining.

Vaginal examination revealed an elongated structure near the urethral process which was confirmed to be an enlarged clitoris (Fig. 1). Further passage of the finger through the vaginal canal revealed a blind ending and the cervical os could not be felt. Examination with a vaginal speculum revealed complete obliteration of the vaginal canal with a band of tissue and it was confirmed to be a hypoplastic vagina (Fig. 2). Per rectal digital examination revealed a tense, enlarged, thick cordlike structure. On performing trans-rectal ultrasonography, a curled uterus like structure with hyperechoic border was noticed (Fig. 3). No signs of patency could be appreciated in the structure. Both the

*Corresponding author.

E-mail address: drsatheshkumar6@rediffmail.com (Soundarapandian Satheshkumar)

Received 10.05.2024; Accepted 26.11.2024

Copyright @ The Indian Society for Study of Animal Reproduction

ovaries could not be detected. Based on the clinical observations, the kid was diagnosed to be having

anomalous genitalia similar to 'freemartinism' as described by Szatkowska *et al* (2004, 2014).



Fig. 1: Enlarged clitoris



Fig. 2: Obliterated vaginal canal

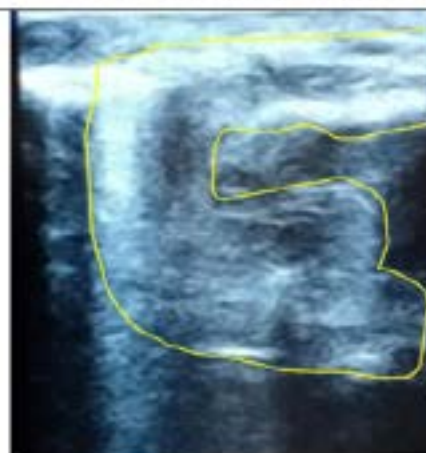
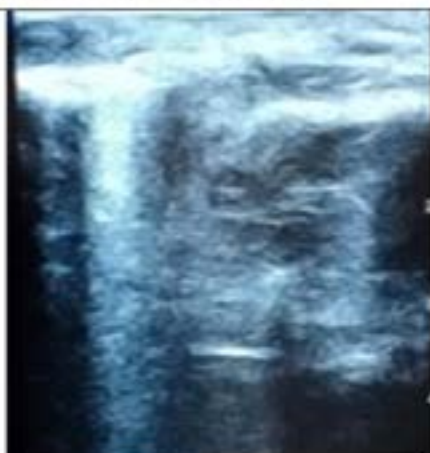


Fig. 3: Ultrasonographic document of non-patent uterine horn

TREATMENT AND DISCUSSION

Even though animal was found to be phenotypically female, based on the clinical and ultrasonographic imaging observations like enlarged clitoris, short blind ended-vagina, cord like uterine horns and absence of gonads, the goat was considered to be an intersex simulating 'freemartinism'. The findings were in concurrence with Szatkowska *et al* (2004) who reported two 'freemartin' kids with similar genital malformations.

In goats with multiple pregnancies, an extremely rare incidence of 'freemartinism' (about 1.0 %) was reported (Yadav *et al.*, 1993), as against 90.0 per cent and 2.0–20.0 per cent incidence among opposite-sex twins in cattle and sheep respectively (Szatkowska *et al.*, 2014). In cattle, increased

incidence of 'freemartin' phenomenon is attributed to the formation of arterio-venous anastomoses between placentas of opposite-sex twins during early foetal life that leads to direct interaction of their hormonal and immune systems and hematopoietic tissues. As a consequence, the genital system of a female co-twin becomes masculinised (Roberts, 1971). On the contrary to bovine species, it is believed that placental vascular anastomosis does not occur in a majority of twin pregnancies in goats. Hence incidence of caprine 'freemartin' is considered to be very rare and is related to the rare occurrence of fetal membrane fusion (Mickelsen and Memon, 2007).

In goats, freemartinism is associated with a 60,XX/60,XY karyotype (Yadav *et al.*, 1993). Female goats having XX/XY chimerism were characterized by extensive pathological changes in the reproductive system and hence they are

sterile (Kozubska-Sobocinska *et al.*, 2016). Even though genetic analysis was not carried out, based on these previous reports, the present case was also considered to be of genetic origin and sterile. Hence no treatment could be suggested.

Szatkowska *et al.* (2004) reported that freemartin goats were being maintained in the farm for two to three reproductive seasons, even though they were not breeding. Similarly, we could observe that goats with breeding problems are ignored or left unnoticed without any attempts for treatment. Attention towards non-breeding goats leads to identification of infertile or sterile status of the animals at the earlier stages. Hence it is recommended for regular monitoring of breeding status of goats to decide upon the therapy or culling in order to improve the economic outcome of the farm.

CONCLUSION

A rare incidence of 'freemartin' like congenital anomaly in a goat kid is reported. Application of basic and advanced diagnostic aids helped in early detection of the anomaly and declaring the prognosis of the condition.

ACKNOWLEDGEMENT

The authors thank the Dean, Veterinary College and Research Institute, Orathanadu, Thanjavur and the Director of Clinics, TANUVAS, Chennai for their support

in documenting the report.

CONFLICT OF INTEREST

None

REFERENCES

- Kozubska-Sobocinska, A., Danielak-Czech, B. and Rejdach, B. (2016). Cytogenetic and molecular diagnostics of XX/XY chimerism in cattle, sheep, and goats – a review. *Ann. Anim. Sci.*, **16**: 989–1005
- Mickelsen, W.D. and Memon, M.A. (2007). Infertility and Diseases of the Reproductive Organs of Bucks. In: Youngquist, R.S. and Threlfall, W.R. (eds.) *Current Therapy in Large Animal Theriogenology*. Saunders Elsevier, Missouri, pp. 519-523.
- Roberts, S.J. (1971). *Veterinary Obstetrics and Genital Diseases*, 2nd Edn., CBS Publishers and Distributors, Delhi.
- Szatkowska, I., Zaborski, D., Proskura, W.S. and Tabor, S. (2014). Polledness intersex syndrome in goats – molecular and histological aspects. *Turk. J. Vet. Anim. Sci.*, **38**: 612-617.
- Szatkowska, I., Zych, S., Udala, J., Dybus, A., BŁaszczyk, P., Sysa, P. and Dabrowski, T (2004). Freemartinism: Three Cases in Goats. *Acta Veterinaria Brno.*, **73**: 375-378.
- Yadav, B.R., Singh, C., Kumar, P., Tomer, O.S. and Yadav, J.S. (1993). Morphological, anatomical and cytogenetical investigations in sexually anomalous goats. *Small Rumin Res.*, **11**: 331–342.