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Case Report

A case of foetal anasarca in a primiparous *Lhasa apso* bitch

[*]Njoku, N.U., Ukweni, C.P., Odirichukwu, E.O. & Jeremiah, K.T.,

[1]*Department of Veterinary Surgery & Radiology, Department of Theriogenology, Michael Okpara Universsity of Agriculture, Umudike, Abia State*

*Corresponding author: njoku.njoku@mouau.edu.ng, +234 806 339 7918

ABSTRACT

Foetal anasarca is a condition characterised by massive generalised subcutaneous edema with or without fluid accumulation in body cavities. This report presents a case of dystocia caused by the lodgement of an anasarca foetus in the birth canal, and treated by Caesarean Section in a Lhasa apso bitch. The bitch delivered one foetus transvaginally unassisted, while the anasarca foetus and one healthy puppy were delivered surgically. Foetal anasarca is considered a rare occurrence in this breed of dog and this case report validates the need for updated data on the incidence of canine foetal anomalies.

Keywords: Bitch, dystocia, foetal anasarca, primiparous

INTRODUCTION

Foetal anasarca is a condition characterised by generalised oedematous body which occurs as a result of increased accumulation of fluid in the subcutaneous tissue of a foetus (Craig, 2000). The accumulated fluid makes them up to twice their original size and amorphous, hence their common description, "monster". Foetal monsters could be due to genetic, physical, chemical or biological factors (Jackson, 2004; Chandrasekaran *et al.,* 2015). Arthur *et al.* (1996) described common foetal monsters seen in farm animals while Zoldag *et al.* (2001) explained that foetal anasarca in dogs, besides congenital malformations, was a common genetic disease of Bulldogs, English Bulldogs, French Bulldogs, Boston Terriers, and Pugs. Other breeds of dogs could birth foetal monsters if exposed to the common canine virus like the Adenovirus – 1 or Parvovirus-1 (Siena *et al.*, 2022). Some medicines such as aspirin, depomedrol and triamcinolone also manifest their teratogenic effects as foetal anasarca (Sridevi *et al.,* 2016). Foetal monsters are usually whelped dead. Where they are born alive, live monsters eventually die in severe cases or can be managed using diuretics, depending on the degree of severity (Mahajan *et al.,* 2022). This report documents a case of dystocia due to foetal anasarca in a bitch and its successful management through caesarean section.

CASE REPORT

A two-year old primiparous Lhasa Apso bitch, weighing 15kg was presented to the Veterinary Teaching Hospital of Michael Okpara University of Agriculture, Umudike, Abia State, Nigeria. The bitch was mated by a Lhasa Apso stud 62 days earlier. The bitch suddenly went off feed two days prior to presentation and had been straining for over 24 hours following the successful whelping of one live puppy. Perivaginal examination revealed a swollen edematous vulva, with dilated cervix, and a foetus in posterior longitudinal presentation (P1), dorso-pubic position (P2) with both hind limbs extended into the vaginal passage presenting as short and stumpy hanging from the birth canal ((Figure I). Traction failed to deliver the foetus and the foetus showed no clear body demarcation. The dog's owner had administered several doses of oxytocin but there was no parturition. Abdominal palpation and auscultation showed evidence of viable foetus. The diagnosis of obstructive dystocia due to foetal abnomality was made, and caesarean section was indicated.

SURGICAL PROCEDURE

The dog was prepared aseptically on dorsal recumbency using dilute (1:3000) chlorhexidine disinfectant (PURIT ANTISEPTIC, Saro Lifecare Limited, Nigeria). Atropine sulphate (Zhejiang Jinling Tianfeng Pharmaceutical Factory, China) at 0.03 mg/kg and xylazine hydrochloride (XYL - M2, VMD, Belgium) at 2 mg/kg were administered intravenously as preanaesthetic medications (Clarke *et al.*, 2014). Ketamine hydrochloride (KETMIN, Laborate

Pharmaceutical, India) was administered intramuscularly at 10 mg/kg (Clarke *et al*., 2014). The patient was placed on Ringer's lactate intravenous fluid (BIOFLEX, Biomedical Limited, Nigeria) at 10 ml/kg/hr.

Caesarean section was carried out using the caudal midventral approach (O'Connor, 2005). Briefly, a 10 cm ventral midline incision was made on the linea alba into the peritoneum, extending from the umbilicus to the pubis, the incision was extended through the muscle layers to reach the peritoneal cavity. A gravid uterine horn was identified and exteriorized. An incision was made on the body of the horn at the less vascularized area, sufficient enough to evacuate the dead foetal monster. The foetus was evacuated by gentle traction, ensuring minimal spillage of the uterine contents. The recovered stillbirth foetal monster had a greatly enlarged cranium with thin bones. The forelimb and hindlimb were short and stump. Its abdomen was distended with fluid and the skin was glistening from profound fluid accumulation (Figure II). The opposite uterine horn was isolated and the same procedure carried out to deliver the second pup which was viable (Figure III). The uterus was flushed with normal saline and the hysterotomy incisions sutured using size 2/0 chromic catgut in a double layer Lembert's suture pattern. The abdominal cavity was flushed again. The muscles were apposed using size 1/0 chromic catgut in a simple continuous pattern. Finally the skin was closed using size 1/0 nylon in a horizontal mattress suture pattern (Figure IV). The laparotomy incision was dressed daily with antiseptic solutions for 7 days. Postoperatively, oxytetracycline was administered at 10 mg/kg intramuscularly (im) daily for 7

Figure 1: Caudal region of the dog, showing presenting hindlimbs of the foetus (arrow).

Figure II. Monster puppy with enlarged head, distended abdomen, short limbs and shiny skin.

Figure III: Healthy and normally formed puppy delivered through Caesarean Section alongside the monster puppy.

Figure IV: Closure of the skin suture

days, while diclofenac was given at 0.5mg/kg im for 5 days. Skin sutures were removed after 10 days. The bitch and survived puppies recovered uneventfully.

DISCUSSION

One of the causes of dystocia is absolute foetal oversize (Long *et al.,* 2022). Foetal anasarca is a common cause of foetal oversize, resulting from accumulation of subcutaneous fluid in the body. The case presented is that of dystocia resulting from foetal oversize arising from subcutaneous fluid accumulation and therefore, requiring surgical intervention. The foetal monster was twice the size of the healthy litter-mate which was delivered transvaginally. The lodgement of the anasarca foetus in the birth canal prevented the parturition of the anasarca foetus and the second healthy foetus which was still in the uterus. Both foetuses were delivered successfully by caesarean section.

The proportion of monster foetuses *in utero* relative to healthy ones is variable. Estevam *et al.* (2022) reported a case where all the puppies born in a litter were monster puppies, while Cunto *et al.* (2015) reported a case where 75% of the puppies had anasarca. In this case report, only one anasarca foetus co-existed *in utero* with two normal puppies. The co-existence of anasarca foetuses with normal foetuses indicates that factors that predispose to this pathology in this case were more likely to be related to the individual foetuses rather than the dam.

Unlike ruminants, very few cases of foetal anasarca have been reported in dogs. Although Lhasa Apso bitches have been documented to have neonatal malformations resulting in dystocia (Moura *et al.*, 2017, Pereira *et al.*, 2019), there is a dearth of information in the area of dystocia due to foetal anasarca in this breed breed as these breeds have not been considered to be genetically predisposed to birthing foetal monsters like other brachicephalics such as Bulldogs, Boston Terriers, Pugs and Pekingese. (Farrell *et al.,* 2015, Jackson 2004, Pereira *et al.*, 2019).

Foetal monsters have been closely linked to cardiac anomalies or inherited recessive genes caused by inbreeding (Farrell *et al.,* 2015). However, in this case, this bitch did not show any signs of cardiac impairment and was not mated by a close relative.

Alpha-2- adrenoceptor agonists are generally contraindicated in Caesarean Section as a result of the bradycardia that the drugs in this class predispose patients to, and also its ability to cross the placenta to have similar effects on foetuses (Clarke et al., 2014). However, atropine increases the heart rate and blood pressure (Clarke et al., 2014). The administration of atropine prior to the administration of xylazine reduces the magnitude of hypotension in patient. It is thought that atropine causes a marked tachycardia and hypertension, and administration of xylazine to such patients causes a marked bradycardia and hypotension, relative to those caused by atropine. As a result, the blood pressure and heart rate reduce to values near the physiological normal. In addition, the speed of surgical procedure also plays a role in determining to what extent the foetuses takes up the drugs. Delivering the foetus early ensures that the foetus takes up only a small dose of the drug. In the case presented, the normal foetus that was delivered via Caesarean Section was alive and healthy.

Caesarean section was used for the relief of dystocia in this case due to the oversize of the patient. Similar cases have been reported of birthing anasarca foetuses through caesarean section (Having & Bullock, 2011; Sharma *et al.*, 2021; Long *et al.,* 2022). The caudal mid-ventral approach of laparotomy is preferred in the dog because of its proximity to the uterus and the lesser amount of intervening tissues, including blood vessels, between the skin and the uterine horns (O'Connor, 2005).

In the case presented, a foetal part was presented, but the size of the foetus was too large, relative to the birth canal, to allow for traction. Other methods of relieving dystocia - further administration of oxytocin to stimulate/enhance uterine contraction, foetal repositioning, episiotomy and foetotomy - were considered either inappropriate or impracticable for this case.

The mortality rate of foetal anasarca cases have been estimated to be between 45% and 78%, depending on the time of diagnosis of foetal anasarca (Having & Bullock, 2011). The earlier in the pregnancy the condition presents, the higher the risk of mortality. Ultrasonography during the course of pregnancy helps in the diagnosis of the condition at its onset (Having and Bullock, 2011) and, consequently, aids early treatment which enhances survival. In the case presented, the pregnant bitch was not presented for examinations during the course of the pregnancy. The condition was diagnosed only at parturition, following Caesarean Section to relief dystocia, at which time the affected foetus had died.

CONCLUSION

This is a rare case of foetal anasarca in Lhasa apso breed of dogs indicating the need for better ways to diagnose foetal anomalies to improve obstetric care. The safe delivery of the one normal puppy through caesarean section without a compromise in the future reproduction potential of the bitch further emphasises the important of quick obstetrical intervention whenever parturition fails to progress to deliver the foetus.

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