Short communication

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Dystocia due to Hydrocephalic Monster in a Chihuahua Dog

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ABSTRACT

The incidence of dystocia in companion animals is relatively low compared to other farm animals, however when dystocia occurs it needs immediate intervention. The present report is a case about successful management of caesarean section in a Chihuahua dog that suffered from dystocia due to fetal hydrocephalus.

Key words: Dystocia, Hydrocephalus, Chihuahua, Dog

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INTRODUCTION

The incapacity of the dam to expel the foetus through the delivery canal on her own at parturition is known as dystocia (Selvaraju *et al.,* 2020). Dystocia is very rare in companion animals, such as bitches, but when it does happen, it can put the dam and her young in danger of death. Five percent is the overall incidence of dystocia reported for bitch. Dystocia is more common in brachiocephalic and small dog breeds. There seems to be a significant difference between the whelping processes of the different breeds. The primary causes of dystocia, according to Stedile *et al.* (2011), are maternal, foetal, and occasionally a combination of these factors. According to Linde-Forsberg and Eneroth (2000), dystocia in the bitch may be caused by large foetuses, malpresentation, and in rare cases, monstrosities. In bitch, foetal causes account for 38.91% of cases (Shwetha *et al.,* 2014).

The current case discusses a dog's effective surgical therapy of dystocia due to fetal hydrocephalus.

CASE HISTORY AND OBSERVATIONS

A one and a half-year-old Chihuahua bitch referred to the Small Animal Gynaecology and Obstetrics Unit, Veterinary Clinical Complex, Veterinary College and Research Institute, Namakkal with the anamnesis of full term pregnant and exhibiting signs of parturition since the

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previous day's evening had not improved. Every physical parameter examined during the clinical assessment was within the normal range. A vaginal examination showed a stuck foetal head and dilated cervix. A radiographic examination identified four foetuses. Upon ultrasound inspection, three viable foetuses with foetal distress (heart rate of around 160 bpm) and one dead foetus had been found. The owner's history, clinical manifestations, vaginal examination, ultrasound examination, and radiography were used to diagnose the current case as dystocia, and a caesarean section (C-section) was chosen as a remedy.

TREATMENT AND DISCUSSION

A mid ventral celiotomy and exteriorization of the gravid uterus were performed under general anaesthesia with the use of diazepam (0.5 mg/kg i.v.,) and propofol (3 mg/kg i.v.,). Two dead foetuses and two live puppies were removed. One foetus among the dead foetuses had hydrocephalus, impeding the delivery canal (Fig. 1). Using chromic catgut 2-0, the uterine incision was sutured using the Utrecht suture pattern. Using polyglycolic acid size 1-0, a continuous interlocking suture pattern was used to close the linea alba. Next, a continuous suture pattern was used to close the subcutaneous and subcuticular layers. Using sterile cotton thread, cross mattress suture pattern was used to close the skin. New-born care for live puppies included elements like warmth and oxygen was given. Radiographic examination of hydrocephalic fetus showed enlarged skull with thin bone (Fig. 2). Post-mortem examination on the deceased hydrocephalic foetus revealed dome shaped calvarium. Histopathological examination of the brain revealed vacuoles in the neuropil of cerebral hemisphere. Post operatively the dam was treated with antibiotic, analgesics and fluids for 5 days. The bitch had an uneventful recovery.

According to Arthur *et al.,* (2001), bitches have a gestation period of 65±5 days. During the initial stage of labour, nesting behaviour, panting, flank watching, restlessness, and occasionally moderate straining and vomiting are observed. In the last part of labour, the bitch typically lies in a lateral recumbent position. Two hours after the start of the second stage of labour is when the first puppy should be born.

Primary uterine inertia may be incomplete, in which case foetus expulsion started but not completed. Inertia can be caused by uterine muscle abnormalities caused by ageing, poor hormone production, or muscular stretching caused by a single large foetus. Other causes of inertia described (Linde- Forsberg and Eneroth, 2000) include the uterus failing to respond to foetal signals due to the presence of one or two puppies, resulting in insufficient stimulation to initiate labour (the single puppy syndrome), or over stretching of the myometrium due to large litters, excessive foetal fluids, or oversized foetuses. In order to avoid pain, a bitch carrying an enormous foetus that is too big to fit inside the pelvis will frequently delay whelping (Singh *et al.,* 2020). It is known that secondary uterine inertia for the bitch is caused by muscle exhaustion that follows obstructive dystocia. It is thought to develop considerably more easily in areas in which partial primary inertia already exists. Some authors believe that the uterine muscular exhaustion after a few pregnancies leads to secondary uterine inertia (Linde- Forsberg and Eneroth, 2000).

A significant percentage of the occurrences of the dystocia observed in the bitch are voluntary labour inhibition. The vertical diameter of a narrow canine pelvis is larger than the horizontal. Some brachycephalic and terrier breeds have congenitally short birth canals; also, the foetuses in these breeds have relatively large heads and wide shoulders, which makes delivery of the foetuses problematic (Linde- Forsberg and Eneroth, 2000). The foetuses are positioned in relation to the pelvic inlet at a quite acute angle during whelping. According to Linde-Forsberg and Eneroth (2000), bull dogs can also have slack abdominal muscles, which can result in insufficient uterine contractions and abdominal straining to raise the foetus into the pelvic cavity. In addition, calluses from prior pelvic immaturity or congenital pelvic malformations may cause a narrowed pelvis (Linde-Forsberg and Eneroth, 2000).

Obstructive dystocia may be brought on by soft tissue defects such neoplasms, vaginal septa, or birth canal fibrosis (Linde-Forsberg and Eneroth, 2000). Vaginal septum formation constituted 0.5% of dystocia in bitch. Vaginal septa usually are remnants of the fetal mullerian duct system but may also occur secondary to vaginal trauma or infection. If extensive, both septa and neoplasms may prevent the passage of foetuses (Linde-Forsberg and Eneroth, 2000). According to Linde-Forsberg and Eneroth (2000), cervical or vaginal fibrosis occurs linked to trauma or inflammatory processes, and in severe situations, it might result in dystocia. Tumours and septa formations may be surgically removed preferably during anestrus and before mating; but in cases of fibrosis surgery is seldom successful because of new scar tissue formation during the healing process. Hypoplasia or infantile tight vulva and cervical bands also leads to obstructive dystocia in bitches.

Fig. 1: Dead hydrocephalic fetus relieved through c-section

Fig. 2: Radiographic examination of hydrocephalic fetus showing enlarged skull with thin bone

Fig. 3: Post-mortem examination of hydrocephalic fetus

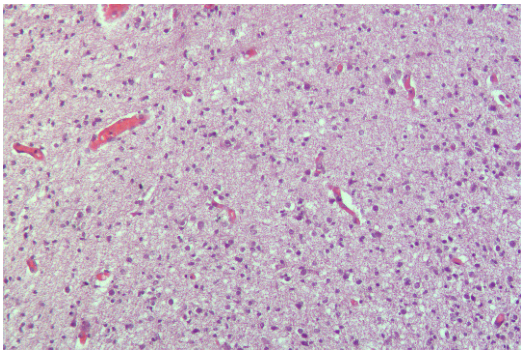

Fig. 4: Histopathology of brain tissue showing numerous vacuoles in the neuropil of cerebral hemisphere (H&E×100)

The highest limit for an uncomplicated birth is thought to be a puppy that weighs 4 to 5 percent of the bitch (Linde-Forsberg and Eneroth, 2000). In the Scottish terrier breed, dystocia is primarily caused by foetal relative enlargement. It additionally makes up a significant fraction (50%) of the foetal causes of bitch dystocia in other breeds (Bennur *et al.,* 2001). Puppies with a big head and a flattened pelvic inlet can develop dystocia in breeds such as the Boston terrier (Linde-Forsberg and Eneroth, 2000). Because of the smaller foetal extremities and the regularity of posterior presentation births, foetal malpresentations are less common in bitches. Premature presentation accounts for forty percent of dog births (Linde-Forsberg and Eneroth, 2000).

According to Bennur et al. (2001), the incidence is estimated to be 25% of all foetal causes. Fetal monstrosity is a relatively infrequent cause of dystocia in dogs however hydrocephalus, incomplete development of brain and skull, fetal anasarca (Sharma *et al.,* 2001) and cyclopia (Jayaprakash *et al.,* 2001) have been reported for the bitch.

CONCLUSION

Obstructive dystocia, which is caused by a hydrocephalus pup lodged in the genitalia, causes excessive straining efforts in the bitch, which in turn lead to secondary uterine inertia. Careful management of dystocia in these species is essential, often requiring an emergency Caesarean section to save the pups when medical therapy with pharmaceutical agents fails to relieve the dystocia.

CONFLICT OF INTEREST

The authors have no conflict of interest to declare.

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