

A case of uterine inertia in an unobstructed birth canal of normal litter size in a Flemish giant rabbit (*Oryctolagus cuniculus*) corrected by repeated oxytocin treatment and supportive care

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Summary

A one-year-old female Flemish giant rabbit that never kindled before was presented forty-eight hours after delivery of three kits. Vaginal examination revealed the presence of a fetus in anterior presentation of normal size in an unobstructed birth canal. Radiographs identified the presence of two normal sized apparently dead fetuses, which was confirmed by transabdominal ultrasound examination. Repeated oxytocin treatment and supportive care enabled the doe to deliver two dead fetuses.

Keywords: Flemish giant rabbit, dystocia, uterine inertia, reproduction

Background

Although dystocia is rare in rabbits,¹ it can occur secondary to factors influenced by the doe or the fetus. Maternal factors include anatomical abnormalities, variations in pelvic sizes and uterine inertia. Fetal factors include malposition, malpresentation, fetal monsters, and fetal death. Uterine inertia represents the main cause of dystocia in rabbits.² Primary uterine inertia is multi-factorial with genetic, mechanical, hormonal, and physical components. Causes of primary uterine inertia include hypocalcemia, obesity, and overstretching of the myometrium. Secondary uterine inertia, commonly referred to as uterine fatigue, occurs due to exhaustion from having previously prolonged contractions. Large litter size can be a reason for uterine inertia.³ The present case describes a dystocia in a Flemish giant rabbit due to uterine inertia that was resolved by repeated oxytocin treatment and supportive care.

Case presentation

A one year-old female Flemish giant rabbit was presented for dystocia to the Veterinary Teaching Hospital. Forty-eight hours prior to presentation, the doe had three viable kits at home and the owners did not notice the expulsion of fetal membranes. The information on the time taken to deliver the first three kits was not recorded. Two hours prior to admission to the hospital, the doe started having uterine contractions and seemed restless. The doe was bred 31 days before she had the first kit and this was her first litter.

On physical examination, the doe was found to be bright, alert, responsive, and there was evidence of straining. She was in desirable body condition (13kgs; BCS 4/5). An edematous, swollen vulva with a hemorrhagic vaginal discharge was noticed. The perivulvar area and hind limbs were mildly stained with the hemorrhagic vaginal discharge. Strong and synchronous femoral pulses were palpated. Respiratory rate and heart rate were within normal limits. A lower than normal body temperature was observed based on the ear temperature (100°F) recording. Her mucous membranes were pink and moist with a capillary refill time of <2 seconds. Mammary glands felt normal on palpation. On abdominal palpation, a pendulous abdomen was felt although no obvious structure was identified. On vaginal examination, a round firm structure was palpated within two centimeters from the vulva.

Abdominal radiographs were obtained in order to identify the structure within the vaginal canal and to evaluate the presence or absence of a fetus. Ventrodorsal and left lateral images were obtained (Figs. 1 and 2). The ventral abdominal wall was moderately pendulous. Two large soft tissue structures extending from the caudal abdomen that contained two full term fetuses were identified. Multifocal gas opacities overlying the fetus on the left side of the abdomen were noted. The skull of the fetus positioned on the cranial pelvic inlet (Fig. 1) appeared to be smaller in size than that of the pelvic canal. Presence of gas within the region of the heart, aorta, and liver was noted on the fetus located on the right side of the abdomen (Fig. 2). A transabdominal ultrasound examination with Doppler revealed the presence of two fetuses that lacked heartbeats.



Figure 1: Ventrodorsal (VD) radiograph, note the sizes of fetal skull and pelvic inlet



Figure 2: Left lateral radiograph, note the presence of gas in the fetus on the right side.

Treatment

Future breeding was discouraged and an ovariohysterectomy was recommended but declined by the owner. At this time, the owners elected medical management. The doe was given butorphanol

(0.1mg/kg, S/C) and two units of oxytocin (I/M), and placed in a quiet, dark room. Thirty minutes later, the doe was examined and on palpation, no fetus could be detected in the birth canal; however, contractions were strong. Three more units of oxytocin were then administered intramuscularly. One hour later, the doe was inspected for any evidence of progression toward delivery. The doe was palpated and while being examined, she urinated crystalized urine. She was then administered 100 ml of subcutaneous fluid (Normosol-R) to maintain moisture within the mucosa. The doe was given five more units of oxytocin and within thirty minutes of administration, a dead fetus was expelled. It appeared full-term; similar in size to the three live ones and no congenital abnormalities were evident based on external observation. The patient was discharged with one dead fetus remaining in the uterus. Overnight hospitalization was discussed which was declined by the owner. Prior to discharge, the doe was administered another dose of butorphanol subcutaneously. The doe was sent home with meloxicam (0.23 mg/kg q 12 hrs PO) and antibiotics (trimethoprim sulfa 15 mg/kg q 12 hrs PO) for a week. Clear instructions were given to the owners at the time of discharge of the patient and regular communications were maintained to determine whether further treatment was required. The client was advised to watch for the last dead fetus to be expelled. According to the owner, the second dead fetus that was expelled at home the next morning was also of normal size with no obvious evidence of decomposition; the doe appeared normal and was nursing the three kits.

Outcome

Ten hours after being discharged from the hospital, the doe delivered the second dead fetus. A total of three live and two dead kits were delivered. The doe was treated with antibiotics and pain medications for a week after delivery. The doe and kits continued to thrive and no further medical intervention was warranted.

Discussion

The time of kindling in this case, 31 days from breeding, was normal. Normal gestation of a doe is approximately 31 to 32 days with a range from 28 to 36 days.^{1,4} Factors affecting gestation length include the age of the doe, weight, genetics, litter size, nutritional status, husbandry practice, and environmental hygiene. Depending on the breed of rabbit, litter size ranges from four to 12 kits.¹ Parturition in rabbits is a relatively quick process and is usually completed in thirty minutes following the initial onset. It is rare for the young to be delivered several hours apart. Hence, in this case stage II and III extended beyond their normal duration. Similar to other multitocous species, the first and second stages of labor in rabbits tend to occur simultaneously.⁵ It is not known whether the shedding of fetal membranes of the first three kits occurred. The clients failed to observe shedding while at home nor was there evidence in the hospital during the time the doe was under medical management for dystocia. Placental delivery most likely occurred without notice and the doe might have swiftly consumed them, a maternal behavior known among breeders. Furthermore, the doe appeared healthy at the time of presentation and during its stay in the hospital with no clinical signs of retention of fetal membranes. Published literature does not provide information on retained fetal membranes in rabbits.

Certain husbandry and nutrition practices have been associated with decreased fertility of does, stillbirths, and decreased survival of kits. Obesity and nutritional deficiencies are amongst the common causes. The level of feed intake during the last week of gestation has been shown to affect kit's survival and birth weight.^{6,7} This doe's feed intake remained consistent throughout the entire pregnancy and the clients have adopted standard nutritional practice.

Use of oxytocin, an ecbolic agent, in this patient was justified given the unobstructed birth canal with normal presentation, position, and posture of the proximal dead fetus as diagnosed by vaginal, radiography, and transabdominal ultrasound examination. Although fetal measurements were not obtained, it is advisable to determine parameters such as the biparietal diameter. The dose of oxytocin chosen was based on prior reports,^{1,8} wherein one to three units of oxytocin have been administered intramuscularly to assist in uterine contraction. Failure of response within 30 minutes necessitated an additional treatment with a higher dose. As reported for dogs,⁹ calcium treatment might have helped in

this case. Since the contractions were strong after the initial treatment calcium administration was considered but not administered. Measurement of peripheral calcium would have been useful to determine whether calcium administration was necessary but the client declined the test. Butorphanol was used to treat this doe to avoid excessive anxiety¹⁰ and its influence or adverse effects on uterine contraction in rabbit are not known. A study in human obstetrics suggested that it had no adverse effects on uterine activity.¹¹

Prolonged stage II led to the death of these fetuses.⁸ As reported in a previous case,⁸ the prognosis would have been better for these two kits, if the patient were admitted after the first evidence of dystocia. Although the present case differs from the one reported previously⁸ in terms of breed, age, animal husbandry, and the condition of the dead fetuses delivered, both does responded to oxytocin treatment and supportive care. The reason for the uterine inertia remains unknown in this case given the normal litter and fetal sizes. Immaturity of the doe and obesity might have contributed to uterine inertia.

Learning points

- Uterine inertia represents the main cause of dystocia in rabbits
- Abdominal radiographic information is useful in diagnosing and correcting dystocia
- Butorphanol treatment is useful in obstetrical cases
- Repeated oxytocin treatment resolves uterine inertia in an unobstructed birth canal

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