

ULTRASONOGRAPHIC ASSESSMENT OF FETAL DEATH IN A PET RABBIT

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ABSTRACT

A six-month-old pregnant female grey rabbit was presented to the outpatient unit of Madras Veterinary College, with a history of discharge from the vagina, dullness, inappetence and owner was not aware of the mating details. Physical examination revealed a distended abdomen, pain on palpation, skin turgor for more than 2 seconds, with a dull woebegone appearance. On abdominal palpation, there was a hard mass suggestive of pregnancy. There were moderate purulent secretions from the vagina. The temperature was within normal range. The ultrasonographic assessment revealed pregnancy with visualization of fetal bones. However, none of the fetus had heartbeat and no clear visualization of fetal organs. However, fetal bones like skull and ribs were visualized. Ultrasonographic assessment revealed a bi-parietal diameter of 11.43 mm in a few fetus and which was tentatively diagnosed at approximately 19-20 days of pregnancy. Emergency surgery was performed, a hysterectomy was done and fetal contents were collected in sterile swabs were sent for microbial testing.

Keywords: : fetal death, pregnancy diagnosis, rabbit, ultrasonography

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INTRODUCTION

Due to an increase in nuclear families, fast urbanization and an increase in the number of apartments and high-rise buildings exotic pets are gaining popularity

among pet lovers. With the increase in the population of such pets, the demand for advanced diagnosis is peer pressure for practitioners to provide service on par with small animals like dogs and cats. Female rabbits are induced ovulators. This causes a lot of difficulties in assessing the fetal age and tentative dates of delivery. Transcutaneous ultrasound using higher frequency probes (7-12 MHz) like linear probes are widely used for non-invasive method of pregnancy diagnosis in rabbits. The present case reports the ultrasonographic assessment of fetal death in a rabbit.

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CASE PRESENTATION AND OBSERVATION

A six-month-old pregnant female grey rabbit was presented to the outpatient unit of Madras Veterinary College, with a history of discharge from the vagina, dullness and inappetence. Physical examination revealed a distended abdomen, pain on palpation, skin turgor for more than 2 seconds, with a dull woebegone appearance. On abdominal palpation, there was a hard mass suggestive of pregnancy. There were moderate purulent secretions from the vagina. The temperature was within normal range.

Ultrasonographic Examination: Ultrasonographic assessment (Aeroscan) was done with a higher frequency (9-11.8 MHz) linear probe. The animal was held in dorsal recumbency after prior clipping of the hairs. Abundant ultrasound gel was applied as a coupling agent. Transcutaneous ultrasonography was performed starting from caudal to cranial in a sagittal plane with the placing of a probe just in front of the pubic bone and slowly directing towards cranial side to visualize the uterus. Ultrasonography revealed pregnancy with visualization of fetal skull (Fig.1) and vertebral column as hyperechoic areas (Fig.4), fetal heart as an anechoic oval-shaped structure (Fig. 2), and the liver was visible as an echogenic structure (Fig.4). However, none of the fetuses had a heartbeat (Fig.3) and no clear visualization of other fetal organs. However, fetal bones like skull and vertebrae were visualized. The ultrasonographic assessment revealed an average bi-parietal diameter of 11.43 mm

in both the two fetuses (Fig.1). The fetal age was tentatively diagnosed as 19 to 20 days of pregnancy. Since the fetuses examined did not have a heartbeat and there was no clear visualization of other fetal organs, emergency surgery was performed after obtaining the owner's informed consent. In this case, an emergency hysterectomy was done with anaesthesia protocol with Butorphanol @ 0.2 mg/kg I/M, Midazolam @ 0.2 mg/kg I/M, given in lateral thigh muscle as premedication, induction with 4% isoflurane after preoxygenation for 10 minutes when adequate muscle relaxation was achieved, isoflurane was reduced to 2.5 % maintenance. The fetal contents were collected in sterile swabs were sent for microbial testing. The three dead fetuses gross BPD was measured using a vernier caliper and it revealed an average of 12.93 mm (Fig. 5) which revealed the fetal age of around 20 days.

Bacterial growth revealed *E.Coli* infection, Tab. Enrofloxacin @5 mg/kg b.wt 24hrs, PO for 10 days. The rabbit showed complete recovery.

RESULTS AND DISCUSSION

In the present case, transcutaneous ultrasonography revealed pregnancy with visualization of the fetal skull and vertebral column as hyperechoic areas, fetal heart as anechoic oval-shaped structure and liver was visible as echogenic structure which was in agreement with the findings of Ajadi *et al.* (2015). However, none of the fetus had a heartbeat and, in the M-mode study no wave formation was visualized. This indicated

fetal death which was in agreement with Harkness and Wagner (1989).

In our present case, the bacterial culture was positive for *E.coli* which might be a possible cause of contamination. Quesenberry and Carpenter (2004) reported various reasons for fetal loss which included excessively large or small litters, stress, genetic predisposition, dietary imbalances, heat, trauma, drug use, infection (listeriosis, pasteurellosis, salmonellosis, aspergillosis, chlamydial, and staphylococcal infection), and systemic disease. In the present case, no such clues could be obtained to specifically pinpoint the cause of fetal loss. According to Dickie (2011) resorption of fetuses and animals failing to conceive are considered to be infertility issues that can be observed during prenatal mortality before 3 weeks gestation which needs an ultrasound diagnosis. Abortion results due to fetal death after 3 weeks gestation (Bishop, 2002; Quesenberry and Carpenter, 2004). Mummification or maceration occurs when fetus is retained for more than 35 days in the uterus and stillbirths occur in the last part of gestation.

The fetal age and BPD in this study corroborated with Soroori *et al.* (2008); and Nwaogu *et al.* (2010). Ovariohysterectomy was done with informed consent from the owner. According to Biddle and Macintire (2000) surgical management, such as Caesarean section or en bloc ovariohysterectomy is indicated if

medical management is unsuccessful or if a fetal or maternal obstruction cannot be corrected in cases of dystocia or fetal loss. Bishop (2002) and Quesenberry and Carpenter (2004) reported that abundant fat in the mesometrium and surrounding the ovaries makes identification and ligation of uterine vessels challenging for an ovariohysterectomy or Caesarean section. However, in this case successful ovariohysterectomy was performed and four dead fetuses were removed.

In general, for routine cesarean, adhesions are prevented by the use of verapamil (0.2 mg/kg SC every 8 hrs for 9 doses) and drugs like polypropylene meshes using combined icodextrin four per cent and dimetindene maleate and biodegradable N, O-carboxymethyl chitosan/oxidized regenerated cellulose composite gauze as suggested by Bouliaris *et al.* (2019) and Cheng *et al.* (2019) respectively. No such medications were used in the present study. Since bacterial growth revealed *E.coli* infection, Tab. enrofloxacin @5 mg/kg b.wt 24hrs, PO for 10 days, and post-operative care was advised along with clean management practices.

CONCLUSION

Rabbits are common pets often presented to pet practitioners for reproductive ultrasonography. Ultrasound monitoring with B-mode and Doppler will be a useful non-invasive tool for calculating gestational age and fetal viability respectively.



Fig 1: Ultrasonography BPD (Head diameter) measuring 11.43 mm



Fig 2 : Ultrasonography of foetal heart anechoic area



Fig 3: Ultrasonography of foetal heart beat on M mode visualized flat lines



Fig 4 : Ultrasonography of foetal vertebrae as hyperechoic areas and echogenic foetal liver (arrows)



Fig 5 : Head diameter of dead foetus using vernier calliper measuring 12.93 mm



Fig 6 : Dead foetus after caesarean section with placenta



Fig 7 : Ovario hysterectomy : uterus, ovary and dead foetuses

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