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Fetal Presentation Abnormality in a Dunkin Hartley Guinea Pig (*Cavia porcellus*)

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Abstract

Dystocia is difficult for parturition due to maternal or foetal causes that requires assistance for delivery. The expected incidence rate of dystocia is more in laboratory animals. A rare case report of dystocia in a guinea pig (*Cavia porcellus*) due to foetal cause is presented. A one-and-a-half-year-old healthy full term pregnant female guinea pig was found dead in her cage and was subjected to post-mortem examination to identify the cause of death. In the right uterine horn, the caudal foetus weighing 124 g was in breech presentation with right unilateral hock flexion and the cephalad foetus of weight 119g was in the anterior presentation. The larger size of the foetuses with various foetal presentation and postural abnormalities have attributed to dystocia and death of the sow in this present case.

Key words: Dystocia, Guinea pig, Postural abnormalities

Dystocia is difficult for parturition that requires assistance for delivery. The first or second stage of parturition may be markedly prolonged due to various maternal or/ and foetal causes leading to dystocia (Roberts, 1971). But dystocia is rare in the commonly used laboratory rodents except guinea pigs (Girling, 2008).

The common cause of dystocia in guinea pigs is failure of separation of fibrocartilaginous pelvic joint in female sows that are bred after 7 months of age where the fusion of pubic symphysis will occur and become insensitive to relaxin during parturition (Brower, 2006). The other causes include obesity where intrapelvic fat impedes delivery (Kondert and Mayer, 2017), uterine inertia due to pregnancy toxaemia, hypo-calcaemia, pregnancy ketosis or development of muscle fatigue secondary to large litter size (3 or more foetus) or small litter with oversized foetus and abnormal foetal presentation, position and posture (Shomer *et al.*, 2013). Uterine torsion as a cause of dystocia in Wistar albino rat (Jalantha and Rajendran, 2021) and deficiency of vitamin-C attributing to dystocia in guinea pigs (Hawkins and Bishop, 2012) were also reported. In the laboratory animals with short gestation size, large litter and shorter generation intervals, the expected incidence rate of dystocia is more. In this article, a rare case report of dystocia in a guinea pig (*Cavia porcellus*) due to foetal cause is presented.

Materials and Methods

The Laboratory Animal Medicine unit of Tamil Nadu Veterinary and Animal Sciences University, a CCSEA registered laboratory animal breeding facility maintains Guinea pigs under conventional cage system of housing with standard environmental temperature of 21 - 23° C and relative humidity of 45 - 55 percent as per the prescribed standards. Light-dark cycle of 12 hours each is being followed and the animals are fed with Co-3 grass, bengal gram, *ad libitum* guinea pig pellet feed and continuous supply of potable water along with vitamin C supplemen-

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tation. Dunkin Hartley, an outbred stock with Trio system of mating is maintained with male and female ratio of 1:2 for breeding.

A one-and-a-half-year-old healthy full term pregnant female guinea pig (as per the records of breeding date maintained in the Lab animal housing facility) with blood stains around her external genitalia was found dead in her cage in the morning during routine check in this facility. The sow was apparently healthy without any sign of illness previously. The appetite and feed intake was normal. In a small animal rodent breeding facility, blood samples will not be collected from pregnant animals for any analysis, as handling and blood collection will create stress to animal and affect the welfare of the animal. The animal was subjected to post-mortem examination to identify the cause of death.

Results and Discussion

On post mortem examination, the abdomen was found distended with blood stains in the inguinal region (Fig 1) and leg of a foetus protruding through the vaginal opening (Fig 2) indicating that parturition had initiated. On further examination, two foetuses were present in the right uterine horn that was almost occupying the entire abdominal cavity. The caudal foetus which was nearer to the cervix was in breech presentation with right unilateral hock flexion and the second foetus anterior to the first foetus was in the anterior presentation (Fig 3 & 4). Blood clots were also observed inside the uterus indicating uterine haemorrhage. The weights of foetuses (from caudal to cephalad) were 124 g and 119 g respectively. Diffuse pale areas of degeneration were observed on all lobes of the liver of the sow. No gross pathological changes were observed in any other organs.

Guinea pigs have bicornuate type of uterus with a single cervix. Puberty occurs at approximately 2 months of age in females and they should be bred between 3 to 4 months of age when they are with 350 to 500 g body weight. The gestation period is 59 to 72 days and is inversely proportional to litter size. A fibrocartilaginous bridge connects the left and right pubic bones of the pelvic canal in guinea pigs (Brower, 2006). During pregnancy, relaxin is secreted by placenta from 30th day of gestation and is responsible for the relaxation of fibrocartilaginous pubic symphysis to about 3 cm during the last week of gestation aiding in easy delivery of the foetus at parturition. The symphysis returns to normal within 24 hours of parturition (Brower, 2006).

The fibrocartilaginous bridge connecting the two pubic bones gets calcified and fuse permanently in males and unbred females between 6 to 9 months of age and is one of the main causes of dystocia in female guinea pigs bred late in age. In breeding units where laboratory animals are kept for production and supply of quality research animals, the selected breeders should be bred at correct weight and age (400 – 500 g and 4 months of age as mortality of sows and loss of litter in breeding colony of guinea pig due

Fig 1. Guinea pig – Blood-stained inguinal region

Fig 2. Protrusion of foetal leg through vagina

Fig 3. Presentaion of foetuses in the right uterine horn and empty left horn indicated by *.

Fig 4. Caudal/posterior foetus in breech presentation with right unilateral hock flexion and cephalad/anterior foetus in anterior presentation

to dystocia is an important economic problem (Williams, 2012).

The causes of dystocia may be maternal or foetal. The maternal causes are which lead to narrowing of the birth passage or factors which prevent entry of foetus into birth canal. These include breeding at young age or improper management resulting in improper growth for the age of the animal or any congenital abnormalities of birth canal or presence any tumour masses in the birth passage (Roberts, 1986). In this present case, failure of pubic symphysis separation in the late pregnancy which is the common cause of dystocia in guinea pigs was ruled out as the sow had normal parturition previous to this pregnancy. As there was no tumour mass in the reproductive tract, obstruction of the birth passage was ruled out.

The foetal cause of dystocia includes the foetal size and abnormal presentation, position and posture of the foetus. The normal birth of guinea pigs is 60 to 115 g. (Harkness *et al*., 2002). Foetal size is an important foetus-related cause of dystocia and the foetal size in the current case is correlated to the cause of dystocia in guinea pigs (Kondert and Mayer, 2017 and Minarikova *et al*., 2015). The foetal size is inversely proportional to the size of the litter and as the litter size decreases, the foetal size increases increasing the risk of dystocia (Blaes, 2010).

Foetal presentation and foetal malformations are the other important foetal causes of dystocia in animals. In foetal malposition, the incidence of posterior presentation is reported as an important cause of dystocia in uniparous domestic animal particularly with breech presentation with bilateral hip flexion where the hind limbs are extended under the foetus. In this case too, the caudal foetus was in the breech presentation with unilateral hock flexion and Blaes (2010) also reported that dystocia in guinea pigs could be due to foetal malposition.

Conclusion

The larger size of the foetuses with various foetal presentation and postural abnormalities have attributed to dystocia and death of the sow in this present case. As no gross pathological changes were observed in any other organs chances of metabolic diseases like ketosis is very less in this case. As this type of case reporting incidence of dystocia in guinea pig due to the foetal mal-presentation was not recorded elsewhere in the last decade, reporting this case

is of prime importance as a cause of dystocia and leading to death in guinea pigs.

References

Blaes V., (2001). Dystocia in cavies. JACBA Spring. Available at www.acbaonline.com/pdf/ACBA%20Health%20Dystocia.pdf. Accessed April 29, 2010.

Brower, M., (2006). Practitioner's guide to pocket pet and rabbit theriogenology. *Theriogenology*, **66**(3):618-623.

Girling, S.J., (2008). Common diseases of small mammals. *Veterinary nursing of exotic pets*. John Wiley & Sons, pp.59-90.

Harkness, J.E., Murray, K.A. and Wagner, J.E., (2002). Biology and diseases of guinea pigs. *Laboratory animal medicine* :203.

Hawkins, M.G. and Bishop, C.R., (2012). Chapter 23–Disease problems of Guinea pigs. *Ferrets, Rabbits, and Rodents Clinical Medicine and Surgery. St. Louis, Missouri, USA: Elsevier Saunders:* 295-310.

Jalantha, P. and Rajendran, R., (2021). A case report on rare presentation of multiple uterine torsions in a Wistar albino rat. *Indian Journal of Veterinary and Animal Sciences Research*, **50**(4):83-86.

Kondert, L. and Mayer, J., (2017). Reproductive medicine in guinea pigs, chinchillas and degus. *Veterinary Clinics: Exotic Animal Practice*, **20**(2):609-628.

Michel, C.L. and Bonnet, X., (2012). Influence of body condition on reproductive output in the guinea pig. *Journal of Experimental Zoology Part A: Ecological Genetics and Physiology*, **317**(1):.24-31.

Minarikova, A., Hauptman, K., Jeklova, E., Knotek, Z. and Jekl, V., (2015). Diseases in pet guinea pigs: a retrospective study in 1000 animals. *Veterinary Record*, **177**(8):200-200.

Roberts, S.J., (1986). Hormonal disturbances resulting in infertility. Veterinary Obstetrics and Genital Diseases. *Theriogenology*, 478-514.

Shomer, N.H., Holcombe, H. and Harkness, J.E., (2015). Biology and diseases of guinea pigs. In *Laboratory animal medicine* (pp. 247-283). Academic Press.

Williams, B.H., (2012). Non-infectious diseases. In: Suckow MA, Stevens KA, Wilson RP (eds). The Laboratory Rabbit, Guinea Pig, Hamster, and Other Rodents. Boston, MA: Academic Press:694-695.