

INFLUENCE OF GESTATIONAL LENGTH, LITTER SIZE AND PARITY ON PARTIAL PRIMARY UTERINE INERTIA IN BITCHES

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The study was conducted at TVCC, Nagpur Veterinary College, Nagpur. Prospectively a complete clinical evaluation was done in 60 clinical cases in bitches with uterine inertia. This study was conducted to compare gestational length and litter size with the parity status in bitches suffering from uterine inertia irrespective of breed, size, age and parity. The frequency of occurrence of uterine inertia was more in primiparous 32 (53.33%) bitches than in pluriparous which was observed in [28 (46.67 %)] bitches. The mean gestational length was calculated as the interval from the first day of mating to the time of presentation and comparative duration of gestational length in bitches suffering from uterine inertia was studied on the basis of first mating date as well as on the basis of ultrasound measurements of foetal head.

Keywords: Bitches, Litter size and parity, Primary uterine inertia.

Dystocia occurs in about 5% of all parturitions in dogs (Linde-Forsberg and Eneroth, 2000). The cause may be either maternal or fetal. The most common form of maternal dystocia in bitches is primary uterine inertia which can be classified as complete or partial (Van der Weijden and Taverne, 1994). Primary uterine inertia is the most common cause of (75%) dystocia in the bitches (Darvelid and Linde-Forsberg, 1994). The condition is characterized by the failure of uterine muscle to expel normal sized fetuses through birth canal which is normal, except perhaps for an incompletely dilated cervix and characterized by contraction which are either completely absent, weak or infrequent (Bennet, 1974).

The gestational length expressed as the interval from an initial or single mating to parturition, is reported to range from 58-70 days (Cancannon *et al.*, 1975). During the present course of investigation, the mean gestational length was calculated as the interval from the first day of mating to the time of presentation. Comparative duration of gestational length in bitches suffering from uterine inertia was studied on the basis of first mating date and on the basis of ultrasound measurements of foetal head.

The ability to precisely predict the duration of pregnancy is essential in order to

manage the parturition or for planning the caesarean section. Therefore by seeing lots of factors affecting gestational length discussed by various authors, the study was conducted to study the comparison of gestational length and litter size with the parity status in 60 bitches with from uterine inertia irrespective of the breed, age, size, and parity.

Materials and Methods

Prospectively a complete clinical evaluation was done in 60 clinical cases from bitches with uterine inertia presented for the treatment at TVCC, Nagpur Veterinary College, Nagpur during the year 2015-2016. A diagnosis that dystocia due to partial primary uterine inertia was made, if the bitches started to deliver its puppies, but the labour ends prematurely, despite the presence of a patent birth canal with a history and ultrasonic evidence of completion of pregnancy term, presence of signs of first stage of labour along with the presence of greenish or blackish-green lochia on the perineum, vulva or vestibule.

The gestational age was calculated by on the basis of interval between first mating to the day of whelping. Bitches with uterine inertia were categorized into either primipara or pluripara to analyze influence of parity on the incidence of uterine inertia. Litter size and parity status was studied in 60 bitches to

analyze the influence on the incidence of uterine inertia. The gestational length expressed as the interval from an initial or single mating to parturition, is reported to range from 58-70 days. Therefore in the present investigation only those bitches were included which had duration of gestational length of minimum 58 days from the day of initial mating.

Results and Discussion

During the study, 60 bitches with uterine inertia belonged to nine different breeds and the gestational age determined by ultrasound measurements varied extensively between the breeds concurring with the statement of Bhagirathi (2008), that

sonography is not very accurate for estimation of gestational age in bitches unless the criteria are developed for each class or breed.

A wide varieties in the individual gestational length in bitches may be due to the fact that many of the bitches have a tendency for acceptance of male from 5-6 days before and 2-3 days after ovulation and the prolonged survival of the ova and spermatozoa has also reported by Holst and Phemister (1971).

4.6.3 Parity of bitches

Table 1 revealed that the frequency of occurrence of partial primary uterine inertia was more in primiparous 32 (53.33%) bitches than in pluriparous which was observed in 28 (46.67 %) bitches.

Table 1 : Influence of parity on the incidence of uterine inertia in bitches (n=60)

| Parity | No. of bitches | Percentage % |
|--------------|----------------|--------------|
| Primiparous | 32 | 53.33 |
| Pluriparous | 28 | 46.67 |
| Total | 60 | 100 |

The results of the present study are in close conformity with Vibha (2012) who observed that the incidence of uterine inertia in bitches was 54 per cent in primipara bitches while it was 46 % in pluriparaous bitches. Almost similar findings were also reported by Prashant (2013) who observed that the incidence of complete primary uterine inertia was higher in primiparous bitches than pluriparous bitches, 54.09 and 45.91 % respectively.

On the contrary Narasimha and Devaraj (2015) reported 31.07 % of uterine inertia in primiparous and the rest had delivered 1-8 times and further he also reported that incidence of dystocia decreased progressively with increase in parity and the

least incidence was recorded in animals with more than 5 parity.

The effect of parity on uterine inertia showed that bitches in the first parity group had the highest incidence of inertia which probably was due to early breeding in life as the bitches were physically immature leading to small pelvis. Most of the time the bitches are mated at first oestrus when they have not reached their maximal reproductive capacity leading to lower litter size and large foetuses.

4.6.4 Litter Size of bitches

The data regarding litter size and incidence of uterine inertia has been recorded and presented in Table 2.

Table 2 : Influence of litter size on the incidence of uterine inertia in bitches (n=60)

| Litter size of bitches | No. of Cases | Percentage % |
|------------------------|--------------|--------------|
| Single litter | 19 | 31.67 |
| 2-4 | 11 | 18.33 |
| 5-8 | 14 | 21.67 |
| > 8 | 16 | 28.33 |
| Total | 60 | 100 |

Incidence of uterine inertia is observed to be highest 31.67 per cent in 19 bitches with single puppy followed by 28.33 % in 16 bitches with litter size > 8, while the incidence of uterine inertia was 21.67 % in 14 bitches with 2-4 litter size and it was lowest (18.33 %) in 11 bitches having litter size of 2-4. The range of litter size was 1-10 in 60 bitches with uterine inertia.

Present findings are in agreement with the findings of Prashant (2014) who also observed that the dams carrying a single foetus appeared to be more prone for the development of complete primary uterine inertia. Present findings are also in agreement with the Freak (1962) who stated that commonest single cause in animals with

uterine inertia was low fecundity and suggested that low fecundity and its accompanying low hormonal influence appeared to result in simple and complete failure to initiate whelping. He also recorded a higher incidence of uterine inertia in animals with high fecundity and attributed the cause of uterine inertia in such animals to more uterine distension.

The mean gestational length of pluriparous bitches (67.43 ± 0.41 days) was a day longer than in comparable primiparous bitches 66.88 ± 0.38 days when calculated on the basis of first mating date and the difference between these two groups was statistically non-significant.

Table 3: Comparative gestation length and litter size within parity of uterine inertia bitches

| Parity of Bitches | No of bitches | Mean Litter size | Gestational length |
|-------------------|---------------|------------------|-------------------------------|
| | | | 1 st breeding date |
| Primiparous | 32 | 5.31 ± 0.62 | 66.88 ± 0.38 |
| Pluriparous | 28 | 4.39 ± 0.61 | 67.43 ± 0.41 |

The mean litter size of 32 primiparous uterine inertia bitches was 5.31 ± 0.62 which was more than that of 28 pluriparous bitches (4.39 ± 0.61). However the difference in litter size between primiparous and pluriparous bitches was statistically non significant.

Almost in accordance with the present findings were reported by Borge *et al.* (2011) who reported that the overall mean litter size at birth was 5.4 ± 0.03 while mean litter size increased with breed size, from 3.5 ± 0.04 puppies in miniature breeds to 7.1 ± 0.13 puppies in giant breeds.

In contrary with the present findings, higher mean of litter size was reported by Gavrilovic *et al.* (2008) who observed the number of pups born per litter as 6.81 ± 2.11 with range of 1 to 12 litters.

Michel and Reichler (2008) reported that in single or twin pregnancies, the foetus may be absolutely oversized and therefore cannot be delivered by the natural route. These findings are in corroboration with the data in Table 2 which shows that the uterine inertia bitches which had single fetuses had the highest percentage of incidence as 31.67 % in uterine

inertia bitches. Therefore from the present findings it can be concluded that the bitches which delivered single litter appeared to be more prone for occurrence of uterine inertia.

During the investigation no significant difference was observed in litter size between the primiparous and pluriparous bitches. While the gestational length duration was significantly higher ($p < 0.01$) in pluriparous bitches than in the primiparous bitches when calculated on the basis of ultrasound measurements. Results observed are in agreement with Eilts *et al.* (2005) who suggested that small samples with limited statistical power may not be able to detect an association between litter size and gestation length, reported that litter size affects gestation length, while the previous study indicated that litter size does not influence gestation length as reported by Tsutsui *et al.* (2006).

In conclusion, our result indicates that gestation length in uterine inertia is affected by parity when the gestational length was calculated on the basis of interval between first mating to the day of whelping.

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