

RETROSPECTIVE STUDY OF WHELPING SYMPTOMS AND MATERNAL CHANGES IN SIXTY UTERINE INERTIA CASES IN CANINES

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Uterine inertia is a significant cause of maternal dystocia in bitches. This study was undertaken to identify the various whelping symptoms and maternal changes that might occur uterine inertia in 60 female dogs presented fortreatment at VCC, Nagpur Veterinary College, Nagpur. During the present study, the temperature, heart, pulse and respiratory rates were within normal physiological limits at the time of presentation. In the present investigation only those bitches were included which had duration of pregnancy period of minimum 58 days from the day of initial mating and 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.

Keywords: Whelping, Maternal, Temperature, Gestational length, Uterine Inertia.

Dystocia is defined as the inability to expel foetuses through the birth canal and occurs in about 5 per cent of all parturitions in dogs (Linde-Forsberg and Eneroth, 2000). The cause may be maternal or foetal. The most common form in bitches is primary uterine inertia, which can be classified as complete or partial. Primary uterine inertia is the most common reason for dystocia in the bitch approaching 75% of the cases (Davidson, 2011). The absence of Ferguson's Reflex is described as primary uterine inertia where as the presence of an obstruction in the birth canal due to an oversized or mal-positioned or mal-presented pup is an indication of uterine inertia which can be described as secondary uterine inertia. Primary uterine inertia is an intrinsic insufficiency of uterine contractions which can occur after the onset of parturition and delivery of one or more pups but uterine contractions are insufficient to deliver the entire litter (partial primary uterine inertia) or when the onset of stage 2 of labor does not even begin (complete primary uterine inertia). In view of the importance of uterine inertia which is an important cause of maternal dystocia, a retrospective study was conducted with the aim to study the whelping symptoms

and maternal changes observed during uterine inertia in female dogs.

Materials and Methods

This is a retrospective study of the data relating to the present investigation were obtained from the obstetrical records of dystocia cases during April 2013 to March 2016. Clinical evaluation was done in 60 dystocia bitches suffering from complete primary uterine inertia (n=24) and partial primary uterine inertia (n=36) irrespective of age, size and breed along with clinical signs of uterine inertia presented and temperature, heart, pulse and respiratory rate were recorded. Bitches with uterine inertia were categorized on exhibition of vaginal discharge as greenish & mucoid, thick black and reddish black. In complete primary uterine inertia, duration of dystocia was determined as a interval from the time when owner first observed the vaginal discharge to the time of presentation at clinic for the treatment. In partial primary uterine inertia, duration of dystocia was determined as the interval from time of delivery of the previous pup to its presentation for further evaluation and treatment. Likewise duration of dystocia and gestational age was calculated by two

methods on the basis of interval between first mating to the day of whelping and on the basis of ultrasound measurements of the foetal head.

The diagnosis of dystocia due to primary uterine inertia was made, if the animal presented had a history of completion of pregnancy term, complete absence or the presence of very weak signs of first stage of labour, and the presence of greenish or blackish-green lochia on the perineum, vulval or vestibule for at least two hours. The diagnosis of dystocia due to partial primary uterine inertia was made, if the second stage of labour had begun, one or more pups had been delivered at least two hours before, but subsequently either there was complete absence of straining or the presence of only weak efforts by the animal to expel the

puppies. Duration of dystocia and gestational age was calculated by two methods on the basis of interval between first mating to the day of whelping and on the basis of ultrasound measurements of the foetal head diameter.

Results and Discussion

Clinical parameters:

During the present study, temperature, heart rate, pulse rate and respiratory rate were within normal physiological limits at the time of presentation (Table 1) and none of the bitches exhibited any clinical evidence of toxemia, septicemia or dehydration. This could be due to the fact that they were presented within a reasonably short time after the onset of whelping.

Table 1 : Mean clinical parameters in bitches suffering from uterine inertia (n=60)

Clinical parameter	Complete primary uterine inertia (n=24)	Partial primary uterine inertia (n=36)
Temperature °F	100.80 ± 0.21	101.59 ± 0.13.
Pulse rate/min	79.04 ± 0.93	84.31 ± 0.81
Heart rate/min	85.67 ± 1.90	84.69 ± 1.70
Respiration rate/min	20.71 ± 0.83	21.83 ± 0.86

Rectal temperature in bitches suffering from complete and partial primary uterine inertia did not differ significantly. Table 1 revealed that average duration of rectal temperature, pulse, heart, and respiration rate did not differ significantly when compared between the bitches suffering from complete and partial primary uterine inertia.

Almost similar values for temperature, pulse rate and respiration rate have been reported by Prashant (2013) in a retrospective study which revealed that the rectal temperature in 40 animals with complete primary uterine inertia ranged between 99.9 and 102.2⁰F and averaged 101.56 ± 0.18⁰F, while the pulse rate ranged between 77 to 88 beats per minute with an average pulse rate of 71.28 ± 0.76 and respiratory rate in 40 animals ranged between

14 and 23 per minute with average 19.20 ± 0.52 per minute.

Although in the present investigation, there was no significant difference in the mean body temperature, pulse rate and respiration rate between the various bitches suffering with dystocia, depicted changes in these parameters. This could be due to the fact that the pet owners reported in time and the long standing cases lead to toxemia or septicemia and may lead to variations in these parameters. It is also expected that the respiration rate, heart rate and pulse rate in dystocia cases may be affected by several factors like travelling stress, other animals presence in clinic, anxiety and management change due to which temperature, heart, pulse and respiratory rate changes.

Colour of vaginal discharge:

The observed findings such as nature of vaginal discharge, development of

mammary glands, secretion of milk and vulval oedema are recorded and depicted in Table 2.

Table 2: Genital tract examination and other findings from uterine inertia bitches (n=60)

Genital tract findings		No of bitches	Frequency (%)
Nature of vaginal discharge	Greenish & mucoid	49	81.67
	Thick and black	07	11.67
	Reddish black	04	6.67
Mammary gland development		52	86.67
Presence of milk secretion		60	100
Presence of vulval edema		36	60.00

Table 2 presents highest percentage of vaginal discharge (81.67 %) as greenish and mucoid, followed by thick and black discharge (11.67%), while reddish black colour was lowest (6.67 %) in 60 bitches of uterine inertia. Milk secretion was noticed in 100 per cent bitches with mammary development in 86.67 per cent. Moderate degree of vulval edema was observed in 36 animals (60.00 %) while in the rest, the vulva only showed mild degree of edema.

Restless behavior, anorexia, and nesting may all be seen several days before parturition as well as during stage one of labor. Linde and Eneroth (2000). Mammary gland turgidity, milk secretion, and relaxation of pelvic and abdominal musculature are described. A decline in rectal temperature below 99.7°F (37.6°C) has been cited as the most consistent change indicating that parturition will take place within the next 12 to 24 hours (Schweizer and Wallen (2000) and Wykes and Olson (2003).

During the present investigation 81.67 % bitches with uterine inertia were presented with history of greenish mucoid discharge Suggesting that the bitches were in the process of parturatio an indicatio of live fetuses. Present findings of reddish black

colored vaginal discharge (6.67%) an indication of period of dystocia which reflect dead fetuses, which was confirmed by ultrasound studies in 4 bitches with foul smelling discharge. Most of the time gases could be noticed in and around the fetuses in ultrasound examination in such cases. From the observations it can be concluded that the vaginal discharge colour may be indicative in viability of fetuses. Thus it can be used as a predictive sign of viable fetuses.

Duration of dystocia in bitches with uterine inertia:

Table 3 presents that out of 24 bitches suffering from complete primary uterine inertia, the duration of dystocia ranged between 4-6 hours in 2 (8.33 %) bitches, between 6-8 hours in 15 (62.50 %) bitches and more than 8 hrs in 7 (20.83 %) bitches. Out of 36 bitches with partial primary uterine inertia, the duration of dystocia was lowest and ranged 2-4 hours in 4 (11.11 %) bitches, while it was highest in 18 (50.00 %) bitches between duration of 4-6 hours, duration of dystocia of more than 8 hrs was present in 8 (22.22 %) bitches, while it was within the duration of 6-8 hours in 6 (16.67 %) bitches.

Table 3: Duration of dystocia in bitches suffering from uterine inertia(n=60)

Duration of dystocia (hours)	Complete primary uterine inertia (n=24)		Partial primary uterine inertia (n=36)	
	No. of bitches	Incidence (%)	No. of bitches	Incidence (%)
2-4	00	00.00	04	11.11

4-6	02	08.33	18	50.00
6-8	07	20.83	06	16.67
> 8	15	62.50	08	22.22
Total	24	100	36	100

Existed period of uterine inertia is very important to decide fetuses viability. Table 3 presents higher percentage of bitches with complete primary uterine inertia presented after 8 hrs in advance phase of uterine inertia persistence, while none from these bitches were presented in early stage of uterine inertia (2-4hrs). On the contrary 50 per cent bitches from partial primary uterine inertia were presented for the treatment within 4-6 hrs of uterine inertia after expulsion of prior puppy. This indicates that the owners of the bitches with complete

primary uterine inertia were unaware of the symptoms and duration of parturition, in order to make a conscious decision to seek veterinary intervention and sometimes due to negligence of the owner.

Duration of gestational length in bitches (n=60):

The duration of gestational length as judged on the basis of date of first mating and ultrasound measurements in bitches with complete and partial primary uterine inertia is recorded and depicted in Table 4.

Table 4: Duration of gestational length in bitches suffering from uterine inertia (n=60)

Gestational length (days)	Complete primary uterine inertia (n=24)		Partial primary uterine inertia (n=36)	
	Duration	Range(days)	Duration	Range(days)
On the basis of first mating date	65.0± 0.69 ^a	58–70	67.29 ± 0.48 ^a	64-72
On the basis of Ultrasound	62.14±0.35 ^b	59–66	62.68 ± 0.43 ^b	58-67

Table 4 presents the mean duration of gestational length assessed on the basis of first mating date was 65.0 ± 0.69 days from complete primary uterine inertia bitches which was significantly (p<0.01) using t-test (Difference of means) higher than the gestational length assessed on the basis of ultrasound measurements (62.14 ± 0.35days) and the mean duration of gestational length assessed on the basis of first mating date (67.29 ± 0.48 days) in bitches with partial primary uterine inertia was significantly (p<0.01) higher than the gestational length assessed on the basis of ultrasound measurements which was 62.68 ± 0.43days.

The present findings are in accordance with the findings of Reddy *et.al.* (2014) who recorded the mean gestation length from first mating to the time of

initiation of treatment as 66.5 ± 1.2, 67.7 ± 0.58, 65.14 ± 1.65 and 62.67 ± 0.92 days.

It can also be clarified for the noticeable inconsistency in the gestation length of bitches that appears to be due to the tendency of the female to accept the male from 5 to 6 days before and up to 3 days after ovulation. In the present study, 60 bitches with dystocia 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.

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