MANAGEMENT OF UTERINE INERTIA IN FEMALE DOGS

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The present study is regarding the management of primary uterine inertia in female dogs from Nagpur city was conducted at Veterinary Clinical Complex, Nagpur Veterinary College, Nagpur. Prospectively a complete clinical evaluation was done in total 36 cases of uterine inertia by randomly dividing into three groups. Twelve female dogs from Group I were infused with 5 % Dextrose intravenous along with Inj. Valethamate Bromide at the dose rate of 1mg/kg body weight intramuscularly. While Group II female dogs were infused with 5% dextrose along with 10% Calcium gluconate intravenously @ 0.2 ml/kg body weight. Following completion of Dextrose and Calcium gluconate infusion, the animals were injected 2 IU/kg Oxytocin injection I/M. Twelve female dogs from Group III were infused with only intravenous 5% Dextrose and kept as control group. Blood samples were collected aseptically to estimate serum calcium, glucose, phosphorus, sodium, potassium, and magnesium before treatment and after whelping. In the non responded female dogs caesarean section was performed.

Keywords: Uterine inertia, Female dogs**,** Blood biochemical parameters, Whelping.

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 female dogs is primary inertia which can be classified as complete or partial (Van der Weijden and Taverne, 1994). As regards with the incidence of dystocia in female dogs, maternal causes are more than that of foetal origin ([a]Bawaskar *et al.*2017).Primary uterine inertia is the most common cause of (75%) dystocia in the female dogs (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. In primary uterine inertia female dog fails to contract the abdominal muscle but the cervix dilates and the placenta can't detach from the uterine wall.

The cause of uterine primary inertia is not clearly known, although a disturbance in the sequence of hormonal events required for normal labour may represent one possible cause (Bergstorm *et al.*, 2006). The suggested causes for primary uterine inertia include deficiency of oxytocin (Bergstorm *et al.*, 2006) serum calcium (Gaudet, 1985) and blood glucose (Linde-Forsberg and Eneroth, 2000). Therefore, many medical protocols used for treatment of primary uterine inertia have centered on intravenous infusion of Oxytocin, glucose and calcium either alone or in combination (Bergstorm *et al.*, 2006). This study focuses on administration of calcium, Valethamate Bromide and Oxytocin in different regimens for treatment of uterine inertia in female dogs.

Materials and Methods

In a prospective study at Veterinary Clinical Complex, Nagpur Veterinary College, Nagpur, a total 36 female dogs suffering from primary partial uterine inertia were randomly divided into two groups having 12 female dogs in each. Out of 36 female dogs diagnosed with uterine inertia 24 cases were of partial primary uterine inertia while 12 cases were of complete primary uterine inertia. Twelve dystotic female dogs from Group I (six each from complete and partial primary uterine inertia) were infused with 5% Dextrose intravenous along with Inj. Valethamate Bromide @ 1mg/kg body weight intramuscularly. Twelve dystotic female dogs from Group II (six each from complete and partial primary uterine inertia) were infused with 5% dextrose along with 10% Calcium gluconate (Calcium-Sandoz R, slowly infused I/V@0.2 ml/kg body weight. Following completion of Dextrose and Calcium gluconate infusion, the

animals received 2 IU/kg Oxytocin injection I/M. On the other hand, a second injection of Oxytocin was given to only those animals where the first injection induced delivery of a pup within 30-60 minutes. Twelve female dogs from Group III with partial primary uterine inertia were infused with only intravenous 5% Dextrose and kept as control group. Caesarean section was done in all the non responding female dogs from all the three groups having primary uterine inertia. The collected data was statistically analyzed using Student's t-test.

Results and Discussion

Blood biochemical parameters in uterine inertia

Serum calcium concentration levels before the start of the treatment was 9.66 ± 0.24, 9.81 ± 0.28 and 9.44 ±0.33 mg/dl in group I, II and III respectively. While the respective values after treatment were 9.48 ± 0.2, 9.56 ± 0.28 and 9.00 ± 0.30 mg/dl. The differences were non-significant using paired t- test and the values were within normal physiological range (Table-1).

When the comparison was made between the groups, the mean glucose concentration before the administration of treatment was 78.93 ± 3.49, 80.16 ± 2.61and 63.35 ± 5.19 mg/dL in group I, II and III respectively, while the respective values in Group I, II and III within 6 hours after the process of normal whelping or after successful cesarean section were 91.70 ± 3.97, 88.96 ± 2.60 and 97.73 ± 9.43 mg/dL respectively. In between these groups there were no significant difference observed in the values of BUN, Creatinine, Protein and Albumin concentration in female dogs diagnosed with uterine inertia (Table-1).

Table-1: SERUM CALCIUM, GLUCOSE, BUN, CREATININE, PROTEIN AND ALBUMIN CONCENTRATION IN FEMALE DOGS

Blood Parameters	Treatment	Group –I	Group-II	Group III
Calcium (mg/dL)	Before	9.66 ± 0.24	9.81 ± 0.28	9.44 ±0.33
	After	9.48 ± 0.2	9.56 ± 0.28	9.00 ± 0.30
Glucose (mg/dL)	Before	78.93 ± 3.492b	80.16 ± 2.61b	63.35 ± 5.19b
	After	91.70 ± 3.97a	88.96 ± 2.60a	97.73 ± 9.43a
BUN (mg/dL)	Before	22.20 ± 1.03	21.74 ± 0.77	21.04 ±1.03
	After	21.58 ±1.14	20.69 ± 0.82	20.40 ± 0.89
Creatinine (mg/dL)	Before	1.13 ± 0.09	0.98 ± 0.10	1.19 ± 0.08
	After	1.21 ± 0.08	1.02 ± 0.08	1.18 ± 0.11
Protein (mg/dL)	Before	5.73 ± 0.24	5.11 ± 0.17	5.28 ± 0.22
	After	5.52 ± 0.30	4.83 ± 0.17	5.03 ± 0.24
Albumin (mg/dL)	Before	2.62 ± 0.16	2.57 ± 0.16	2.47 ± 0.15
	After	2.46 ± 0.13	2.87 ± 0.14	2.31 ± 0.13

Blood glucose concentration in all the 36 animals was within the normal range. It is possible that animals with dystocia are in stress condition with increased release of glucocorticoids which in turn may be responsible for an elevated blood glucose concentration. All serum biochemical and blood parameters were within normal reference range with no signs of abnormality. It is unlikely that the serum concentration of the electrolytes is a cause to uterine inertia in the female dogs. But during the present study serum glucose level was low in all female dogs having uterine inertia which increased significantly after treatment in both the groups; similar findings are also reported by Linde Forsberg and Eneroth (2000), who reported hypoglycaemia as a cause of uterine inertia, especially in canine dystocia; whereas Bergstorm *et al. (*2010) reported hyperglycemia secondary to high cortical concentrations during dystocia in the female dogs.

During the present study serum calcium levels were all in the physiological range. Despite serum calcium often being within the normal reference range, resolution of dystocia caused by uterine inertia with administration of calcium indicates its potential role in uterine inertia as also reported by Hollinshead *et al.* (2010). This suggests that the benefit of calcium administration is at cellular or sub cellular level.

Efficacy of treatment protocols in uterine inertia

The efficacy of intravenous infusion of Dextrose 5% along with Valethamate Bromide was evaluated in 12 female dogs with uterine inertia, 6 each from complete and partial primary uterine inertia. Out of 6 female dogs with complete primary inertia, none of the case responded, whereas only one case (16.67%) of partial uterine inertia responded to the treatment (Table-2).

Table 2: EFFICACY OF DIFFERENT TREATMENT PROTOCOLS OF PRIMARY UTERINE INERTIA (N=60)

Treatment Group	Complete primary uterine inertia female dogs (n=24)			Partial primary uterine inertia female dogs (n=36)		
	Cases Treated	Cases relieved	Success (%)	Cases treated	Cases relieved	Success (%)
Group I	6	0	00.00	6	1	16.67
Group II	6	1	16.67	6	5	83.33
Group III	--	--	--	12	3	25.00
Total	12	2	16.67	24	9	37.50

Table-2 also depicted that an efficacy of intravenous infusion of dextrose 5%, calcium gluconate, oxytocin along with valethamate Bromide was evaluated in 12 female dogs suffering from dystocia, 6 each of complete and partial primary uterine inertia. It was observed that in only one case (16.67%) of complete uterine inertia the bitch showed response, while 5 female dogs responded from partial primary uterine inertia with 83.33 per cent success rate. The present findings are in accordance with the single case report of Chutia *et al. (*2016) who treated a Labrador bitch with incomplete uterine inertia and treated the case successfully by using two doses of Oxytocin @10 IU with 2 hrs along with calcium gluconate and DNS which was found effective and all five pups were delivered normally. In contrast with the present findings [b]Bawaskar *et al*., 2017, narated more rate of success as 58.33 per cent by using Calcium, Oxytocin and Dextrose in the treatment of 12 uterine inertia affected female dogs. The efficacy of intravenous infusion of 5% Dextrose from control Group III was evaluated in 12 female dogs with partial primary uterine inertia and the positive response was observed in 3 (25.00%) female dogs (Table-2). Similar report was also recorded by Linde-Forsberg and Eneroth, (2000) who stated hypoglycaemia to be the cause of primary inertia, especially in toy breeds of dogs.

Therefore present findings have supported that in case of unavailability of the laboratory facilities, we can adopt Group II protocol with higher percent of success in dystocia caused due to partial primary uterine inertia in female dogs.

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