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Comparative studies on haemoto: Biochemical parameters in female dogs with complete primary uterine inertia and with spontaneous whelping in female dogs

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Abstract

The study was carried out to document and compare the haemato-biochemical parameters in 40 female pregnant dogs diagnosed with complete primary uterine inertia (PCUI) as well as 6 female pregnant dogs exhibiting the spontaneous whelping. Blood samples were collected from all the animals in both the groups to estimate the haematological (TLC, PCV, and Hb) and biochemical (serum calcium, serum magnesium, phosphorus and Blood Urea Nitrogen) parameters. The mean TLC, PCV, Hb, Serum Calcium, Serum Magnesium, Phosphorus and Blood Urea Nitrogen in PCUI was 10653 ± 1302 count/mm³, 37.65 ± 3.75 , 11.74 ± 0.36 , 10.12 ± 0.48 , 2.24 ± 0.17 , 4.42 ± 0.28 and 18.93 ± 3.68 respectively, similarly in spontaneous whelping animals was 10155 ± 1070 count/mm³, 35.67 ± 2.05 , 11.67 ± 1.11 , 9.97 ± 0.26 , 1.72 ± 0.86 , 4.28 ± 0.44 and 17.52 ± 1.11 , respectively. The present study revealed that there is no significant difference ($P > 0.05$) between the Haemoto-biochemical parameters in both female dogs with PCUI as well as spontaneous whelping.

Keywords: Female pregnant dogs, complete primary uterine inertia, haemo-biochemical parameters

Introduction

The veterinarian handling dystocia is largely concerned with correcting or relieving the immediate interference to birth, which have been traditionally classified into fetal or maternal in origin and maternal dystocia were more common than fetal (Bennet, 1974; Arthur *et al.*, 1986; Darvelid and Linde-Forsberg, 1994) [2-1-5]. The cause of primary uterine inertia is still not very clear. The suggested causes for primary uterine inertia include a deficiency of oxytocin (Bergstrom *et al.*, 2010) [3], serum calcium (Gaudet, 1985) [6] and blood glucose (Linde-Forsberg and Eneroth, 2000) [9]. Another suggested cause of primary uterine inertia is disturbance in the sequel of hormonal events required for normal labor (Bergstrom *et al.*, 2010) [3].

Materials and Methods

The study was carried out on clinical cases of female pregnant dogs with Primary Complete Uterine Inertia as well female pregnant dogs exhibiting spontaneous whelping presented to the obstetrical unit of the Department of Veterinary Gynaecology and Obstetrics, Veterinary College, Bengaluru during the course of the study (April 2015 to March 2016). Blood samples were obtained from every animal for haemato-biochemical analysis.

Haematological parameters studied in animals with Complete Primary Uterine Inertia and in animals exhibiting spontaneous whelping were, Total leukocyte count (1000/ μ l), Packed cell volume (%) and Hemoglobin (g %). The blood samples were analyzed immediately after the collection by using fully automatic blood cell counter (ERMA INC., Japan). The serum calcium concentration was determined spectrophotometrically (TRIVITRON LABMATE 10 plus) using standard diagnostic kit (ACCUCARE - Calcium reagent, Lab- Care Diagnostic (India) Pvt. Ltd.) (Michael *et al.*, 1994) [10]. Phosphorus, Magnesium and Blood Urea Nitrogen in serum determined by the Ammonium Molybdate reagent, Mon reagent endpoint and automatic blood biochemical analyzer respectively. The data generated in present study were tabulated and expressed as percent. Mean and standard error were computed. Where ever necessary, the data analyzed using one way ANOVA as per the procedure detailed by Snedecor and Cochran (1989) [12].

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Result and Discussion

Mean total leukocytes count (TLC), 10653 ± 1302 cells/mm³, Mean packed cell volume $37.65 \pm 3.75\%$ and Mean hemoglobin 11.74 ± 0.36 g% in 40 animals diagnosed as cases of primary complete uterine inertia were recorded. Similarly in animals exhibiting spontaneous whelping was recorded as 10155 ± 1070 , 35.67 ± 2.05 and 11.67 ± 1.11 respectively (Table No 1). In the present study, both hemoglobin and packed cell volume of animals with uterine inertia as well as female dogs whelping spontaneously were on the lower side of the physiological range for non-pregnant dogs, possibly due to haemodilution effect as suggested by Colcannon and Verstegen (1998) [4]. However, the hemoglobin and packed cell volume concentration in animals diagnosed as cases of Primary Complete Uterine Inertia was similar to those in spontaneously whelping group suggesting that uterine inertia do not significantly influence the haematological parameters.

The mean serum calcium levels (10.12 ± 0.48 mg/dl) were determined to be within the normal physiological concentration in all the 40 animals with complete primary uterine inertia. Further, the mean serum calcium concentration recorded in female dogs with primary complete uterine inertia did not differ significantly with those observed (9.97 ± 0.26 mg/dl) in female dogs exhibiting spontaneous whelping

(Table:1). Kraus and Schwab (1990) [8] opinion that serum calcium concentrations in many bitches with primary inertia were similar to those with normal myometrial contractions, making a diagnosis of hypocalcaemia difficult unless ionized calcium level is available.

The mean serum magnesium concentration, mean serum phosphorus concentration and mean blood urea nitrogen in cases of CPUI were 2.24 ± 0.17 mg/dl, 4.42 ± 0.28 mg/dl and 18.93 ± 3.68 mg/dl respectively. Similarly in cases of spontaneous whelping above parameter were recorded as follows 1.72 ± 0.86 mg/dl, 4.28 ± 0.44 mg/dl and 17.52 ± 1.11 mg/dl respectively (Table:1). The mean serum magnesium concentration, the mean serum phosphorus concentration and mean BUN concentration were recorded in female dogs with primary complete uterine inertia did not differ significantly with those observed in female dogs exhibiting spontaneous whelping. There were lack of available of literature upon the blood urea nitrogen concentration in dystocic dogs. It is generally observed that a parturient dog is anorectic (Arthur, 1986) [1] and particularly so when dystocia occurs and the blood urea nitrogen level are reported to increase following fasting (Kaneko at el., 1993) [7]. However, the blood urea nitrogen concentration is also influenced by several other extraneous factors making the inference difficult.

Table No 1: Haemato-biochemical parameters in spontaneously whelping female dogs (n=6) and in female dogs diagnosed as in cases of complete primary uterine inertia (n=40)

Hematobiochemical	Spontaneously whelping female dogs (n=6)	Female dogs diagnosed as in cases of complete primary uterine inertia (n=40)
Mean total Leukocyte count cells/mm ³	10155 ± 1070^a	10653 ± 1302^a
Mean Packed cell volume (%)	35.67 ± 2.05^a	37.65 ± 3.75^a
Mean Haemoglobin (g %)	11.67 ± 1.11^a	11.74 ± 0.36^a
Mean Serum calcium concentration (mg/dl)	9.97 ± 0.26^a	10.12 ± 0.48^a
Mean Serum magnesium concentration (mg/dl)	1.72 ± 0.86^a	2.24 ± 0.17^a
Mean Serum phosphorus concentration (mg/dl)	4.28 ± 0.44^a	4.42 ± 0.28^a
Mean Blood Urea Nitrogen (mg/dl)	17.52 ± 1.11^a	18.93 ± 3.68^a

* Values bearing the common superscript between the columns do not differ significantly (P>0.05)

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