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Management of canine gestational anemia

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Abstract

Pregnant dogs presented with anorexia and lethargy were subjected to routine clinical and haematological examination which revealed gestational hypochromic anaemia. The cases were treated with hematinics for 3 weeks and the outcome was discussed.

Keywords: Gestational anaemia, dogs, hematinics

Introduction

Anemia is one of the most frequent hematological diseases accompanying gestation. A mild anaemia is normal during pregnancy due to an increase in blood volume. During pregnancy, while all the elements of blood increases, the increment in plasma volume is proportionately greater which leads to apparent drop in the hemoglobin level called the “physiological anemia”. On the other hand, in some cases absolute anemia occurs during gestation with serious consequences in the normal development of gestation. It is important to establish the limit between the two expressions of the erythrocyte balance, physiological anemia and absolute gestational anemia. Being familiar with the etiopathogenesis and knowing the diagnosis of gestational anemia is an important element in approaching a new therapy and an adequate prophylaxis (Condrea, 2005) [1].

Materials and Methods

12 female dogs presented to the medicine ward of Veterinary Clinical Complex, NTR college of Veterinary science, Gannavaram with a history of anorexia, lethargy, exercise intolerance and going down condition were taken for this study.



Fig 1: Pale buccal mucous membranes

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Fig 2: Ultrasonogram showing head of foetus

Physical examination, clinical examination with all vital signs were recorded. Blood and serum samples were collected aseptically from healthy animals and clinical cases for carrying haemato-biochemical examination by standard tests. Faecal and blood samples were examined to rule out parasitic etiology. Pregnancy was confirmed using abdominal ultrasonography by using ALOKA PROSOUND α 6LT Ultrasound machine. Serum iron levels were estimated using Thermo scientific instrument (Multiskan GO analyser) using standard kits manufactured by coral clinical system using ferrozine method. In addition, fresh blood smears were air-dried and stained and evaluated microscopically for polychromasia, erythrocyte and leukocyte morphology. Decreased RBC count, hematocrit, and hemoglobin concentration were used to define anemia.

Results and Discussion

Physical examination revealed very pale buccal (Fig. 1) and conjunctival mucous membranes. Heart rate (180/min) and respiratory rate (35 breaths/min) were slightly higher than normal. Temperature (102° F) was normal. Ultrasonography revealed gestational sacs confirming pregnancy (Fig 2). The blood smear revealed poikilocytosis and hypochromasia (Fig.3) and hematology (Table 1) revealed that the dogs were having low levels of haemoglobin and PCV suggesting anaemia. The mean values of serum iron levels in affected dogs was 78.80 ± 4.02 (ranged from 38.83 to 129.34 $\mu\text{g/dl}$). Basing on all the clinical and laboratory findings the cases were diagnosed as gestational anaemia.

Table 1: Mean hematological parameter in pregnant bitches before and after therapy.

S. N.	Parameter	Mean values before thearap (n=12)	Mean values after therapy (n=12)
1	Hb (g %)	8.08 ± 1.32	10.20 ± 1.03
2	PCV (%)	22.14 ± 1.82	30.20 ± 3.20
3	TEC (Millions/cmm)	3.84 ± 0.18	5.8 ± 0.43
4	TLC (thousands/cmm)	13.34 ± 0.13	14.22 ± 0.36
5	Neutrophils (%)	70.20 ± 1.37	72.20 ± 1.32
6	Lymphocytes (%)	29.82 ± 0.32	30.82 ± 0.22
7	Eosinophils (%)	0.49 ± 0.12	0.34 ± 0.34
8	Monocytes (%)	-	-

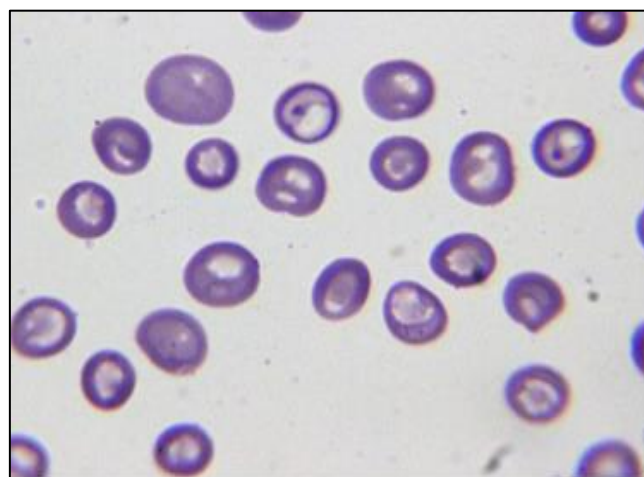


Fig 3: Blood smear showing poikilocytosis and hypochromasia. Leishman's stain, 1000X

The dogs were treated with inj. Iron dextran (Imferon®) @ 100 mg/kg body weight I/M at weekly intervals for 3 weeks, Syrup Carica Papaya extract fortified with vitamins and Minerals (Thromb Beat®) 5ml oral BID for 3 weeks and Inj Belamyl 0.5 ml I/M on alternate days for one week. The owners were advised to feed the dog's high protein and balanced diet. All the dogs were reexamined after 3 week with slight increase in Hb, PCV and total erythrocyte count and blood smears revealed regenerative forms of RBCs (Fig.4) in circulation and slight increase in serum iron levels suggesting recovery.

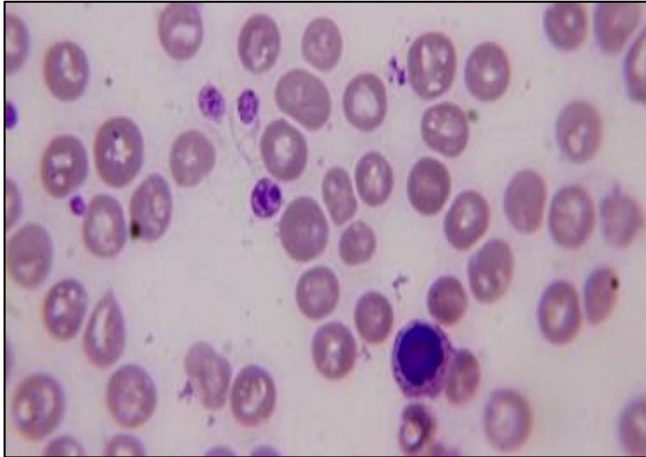


Fig 4: Regenerative form of RBC (nucleated RBC) on the blood smear. Leishman's stain, 1000X

Discussion

Anaemia in pregnant bitches is usually a relative anaemia and occurs in majority of the cases with a hemoglobin between 9g% to 10g% due to a physiological increase of the plasmatic volume of 45-50% as compared to an increase of only 25% of the erythrocytes volume (Condrea, 2005) ^[1]. Absolute anaemia in pregnant bitches occur due to deficiency of iron as utilization of iron increases during growth of fetus in advanced stages of pregnancy (Raskin, 2003) ^[2]. Hypochromic microcytic anaemia is typical of severe iron deficiency. The thin erythrocytes in iron deficiency are more fragile and susceptible to mechanical stress leading to lysis of RBC and hence anaemia develops (Sastry and Ramarao, 2001) ^[3]. In the present study, hypochromic anaemia has been diagnosed based on the complete blood picture and serum Iron levels. Hence, Iron (for haem synthesis) and B-complex vitamins (help in the maturation of RBCs during erythropoiesis) were administered for a period of three weeks. Parenteral forms of iron can be administered if oral supplementation causes side effects like vomiting and malabsorption or if compliance is poor. Iron dextran can be given at a dose of 10 mg elemental iron per kg body weight weekly to dogs and is absorbed primarily by the lymphatic system following intramuscular administration, and approximately 70% of the iron is absorbed from the injection site within days (Giger, 2005) ^[4]. So, to prevent complications and stress in pregnant bitches iron should be supplemented with frequent monitoring of blood samples in advanced stages of pregnancy.

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