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## Prevalence of anemia in dogs: A retrospective study

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### Abstract

Anemia in canines have multiple etiology and it is one of the most common condition reported. In the present study blood samples collected from dogs presented to clinics were tested for anemia and based on the levels of hemoglobin, they were classified into mild, moderate and severe. Most of animals suffering with anemia showed clinical signs such as anorexia, tick infestation, pale mucous membranes and pyrexia.

**Keywords:** Anemia, hemoglobin, mild, moderate, severe

### Introduction

Anemia is one of the most common problem in the veterinary medicine. Anaemia is a condition in which the number of red blood cells (or) the haemoglobin concentrations is lower than normal. Anaemia is defined as an absolute decrease in red cell mass as measured by RBC count, haemoglobin concentration and PCV <sup>[1]</sup>. Anaemia can occur in three ways viz., due to blood loss, decreased red blood cell production, and or increased red blood cell break down. The main causes of blood loss are trauma and gastrointestinal bleeding in dogs and the decreased production may include bone marrow aplasia, chronic kidney disease, iron deficiency, a lack of vitamin B12 and a number of neoplasms of the bone marrow. Anaemia due to increased red blood cell breakdown is called haemolytic anaemia and occurs commonly in dogs with variable degree of severity. Haemolytic anaemias are typically regenerative and result from lysis of RBCs in either intra or extravascular space. Intravascular haemolysis results in haemoglobinemia and haemoglobinuria, whereas extravascular haemolysis does not <sup>[2]</sup>. Incidence of anaemia invariably resulting in death of dogs over a period of illness is increasing in India from the last few decades due to introduction of exotic breeds. Unfortunately, these breeds are more susceptible to internal parasitism as well as parasitic infections of locally adapted pathogenicity. The most important abnormality in anemia is the hypoxemia and subsequent tissue hypoxia that results from the reduced hemoglobin concentration and oxygen carrying capacity of blood <sup>[3]</sup>.

### Materials and Methods

Blood samples from 54 canine cases referred to veterinary clinical complex, Tirupati were assessed for hemoglobin concentration using sahlis acid hematin method.

### Results and Discussion

Out of 54 blood samples, 43 dogs (79.6%) suffered with anaemia (Hb < 12g %), these were again divided into mild, moderate and severe.

The animals with Mild anaemia (Hb= 10-12 g %) were 22 (40.7%) in number and mean+SE of Hb was 11.07±0.23. They exhibited clinical symptoms such as, reduced food intake (anorectic), vomitions after feeding. Haematuria is noticed in some animals, Proestral bleeding and white discharges were noticed from vagina in few. Others reported Skin rashes and echymotic lesions, shivering with temperature of 102.2 F.

Moderate anaemia (Hb=8 - 9.8 g %) was reported in 11 (20.3%) animals with mean+SE of Hb as 8.63±0.29. These animals showed Tick infestation, Epistaxis (bilateral and unilateral) with pale pink Mucous membranes. The Temperature of 103.05 F was noticed in most of the animals.

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Ten animals (18.5%) suffered with Severe anaemia (Hb<8 g %) with mean+SE of Hb as 6.52±0.16. the animals were dull, and fever was noticed. There was complete anorexia, few showed alopecia, tick infestation, palpable lymphnodes and many showed a temperature of 103.9 F with very pale mucous membranes. Similar findings have also been reported by other authors<sup>[4]</sup>.

Anemia can occur due to iron deficiency in canines where the dog's body lacks sufficient iron to produce hemoglobin, which is necessary for the production of red blood cells. Symptoms of iron deficiency anemia in dogs include weakness, fatigue, pale gums, and decreased appetite. Treatment involves identifying and addressing the underlying cause of the anemia, along with iron supplementation through diet or supplements. In severe cases, blood transfusions may be necessary to restore red blood cell levels. Prevention of iron deficiency anemia in dogs involves providing a balanced diet with enough essential nutrients, including iron<sup>[5]</sup>. Immune mediated haemolytic anaemia (IMHA) is a common type of anaemia in dogs that results from a type II hypersensitivity reaction. It is a condition where the dogs immune system attacks its own red blood cells, leading to decrease in red blood cell count and hemoglobin levels. Few infections, such as mycoplasma and babesia, can trigger an immune response that leads to the destruction of red blood cells and also Dogs with cancer, particularly lymphoma, are at higher risk of developing IMHA. Treatment for IMHA involves identifying and treating the underlying cause, if possible, along with immunosuppressive therapy to suppress the immune systems attack on red blood cells. Blood transfusions and supportive care may also be necessary to help the dog recover<sup>[6]</sup>. Anaemia caused by parasitic infection is also common in canines. The most common parasites that can cause anemia in dogs include fleas, ticks, and hookworms. These parasites feed on dog's blood, leading to a decrease in red blood cell count and hemoglobin levels. Another common cause of anaemia in dogs is infection with hemoparasites, such as babesia and ehrlichia. These parasites invade the dogs red blood cells, causing them to rupture and leading to a decrease in red blood cell count and hemoglobin levels. Symptoms of anemia caused by hemoparasites may include fever, loss of appetite, pale gums, and weakness. Treatment for anaemia caused by hemoparasites involves treating the underlying infection with appropriate medications, along with blood transfusions and supportive care to help the dog recover. Preventive measures such as regular tick control and avoiding exposure to contaminated environments can help reduce the risk of hemoparasite infections in dogs<sup>[7]</sup>.

### Conclusion

The present study concludes that anemia is most prevalent in dogs and it is very important to establish the cause of anemia among the various probable reasons to properly treat the condition.

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