**JOURNAL CLUB HEMATOLOGY: REVIEW FOR THE PRACTITIONER**

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D-dimer is a product of plasmin cleavage of cross-linked fibrin during fibrinolysis. This study evaluated the sensitivity and specificity of a point of care d-dimer test kit. The test kit is different than the d-dimer test utilized in reference laboratories because it employs a canine monoclonal antibody against d-dimer. Four groups of dogs were tested: healthy dogs, dogs with internal hemorrhage, disseminated intravascular coagulation and thromboembolic disease. Blood samples from dogs in all groups were tested using the canine monoclonal antibody as well as other d-dimer and fibrin degradation product (FDP or FSP) tests. The d-dimer point-of-care test kit was sensitive for the diagnosis of thromboembolism and disseminated intravascular coagulation, but it was not specific for the diagnosis of those diseases since it was also positive in dogs with hemorrhage. The d-dimer point-of-care test kit was more specific for the diagnosis of thromboembolism and disseminated intravascular coagulation than the FSP test. The d-dimer point-of-care test kit was easy to use and interpret by a variety of personnel.

Clinical Implication: Because it gives results rapidly and accurately, the test kit is useful in the clinical diagnosis of disseminated intravascular coagulation and thromboembolic disease.


The Cavalier King Charles Spaniel has multiple platelet abnormalities. Macrothrombocytosis causing pseudo-thrombocytopenia, idiopathic asymptomatic thrombocytopenia, immune mediated thrombocytopenia have all been described in the Cavalier King Charles Spaniel. Myxomatous mitral valve disease is also common in this breed and is associated with decreased platelet reactivity. This study evaluates platelet function in normal control dogs and Cavalier King Charles Spaniels with and without mitral valve disease to determine if a point of care instrument PFA-100, could be used to identify dogs with normal and abnormal platelet function. Fifty-seven of the 86 Cavalier King Charles Spaniels were found to have idiopathic asymptomatic thrombocytopenia. Testing using the PFA-100 identified Cavalier King Charles Spaniels with mitral regurgitation as having decreased platelet reactivity. The authors hypothesize the platelets are activated due to increased shear stress in the abnormal heart and that inflammatory mediators released from platelets may play a role in mitral valve disease in the Cavalier King Charles Spaniel.

Clinical Implication: Despite multiple quantitative and qualitative abnormalities of platelets in the Cavalier King Charles Spaniel, clinical bleeding is rare.


Hemolytic transfusion reactions are uncommonly reported in the dog. The report details a dog with immune mediated hemolytic anemia that received multiple transfusions. DEA 4 is a canine red blood cell antigen which is present on the red blood cells of 98% of dogs. This transfusion recipient was negative for DEA 4 and following a DEA 4 positive transfusion produced alloantibodies to DEA 4. When the dog received a subsequent transfusion of DEA 4 positive red blood cells, a hemolytic transfusion reaction ensued. The dog had been crossmatched prior to receiving the transfusion but the incompatible results were misinterpreted as autoantibodies due to immune mediated hemolytic anemia. Knowledge of this dog’s blood type could have prevented the transfusion reaction, testing kits are not available for use outside reference laboratories except for DEA 1.1.

Clinical Implication: Transfusion reactions due to production of alloantibodies by the recipient do occur and pretransfusion testing should be performed in an attempt to prevent this type of transfusion reaction.


Immune mediated hemolytic anemia (IMHA) is an important and frustrating hematologic disorder in the dog. Intuitively, it seems administration of a greater number of immunosuppressive agents would result in a better outcome, but this has not been proven. This study reports a randomized prospective controlled study comparing prednisone alone plus prednisone and cyclophosphamide for the treatment of IMHA. The two groups were similar regarding degree of anemia and thrombocytopenia, age, body weight, Coombs test results and serum bilirubin concentration. Dogs received prednisone 1-2 mg/kg BID with or without cyclophosphamide (50 mg/m² x 4days for 4 weeks). Within 8 days, 2/10 in the prednisone group and 3/8 in the prednisone and cyclophosphamide group had died due to ongoing hemolysis. Administration of cyclophosphamide appeared to suppress the reticulocyte count.

Clinical Implication: Administration of cyclophosphamide early in the treatment course of IMHA does not result in a more rapid resolution of hemolysis and in fact may have a negative impact on the outcome of the case. Routine use of cyclophosphamide cannot be recommended.

Changes occur in the parameters of the CBC and chemistry profile in dogs as they mature. This report analyzes the data from 34 beagles and 44 Labrador retrievers tested over a 15 year period. Most changes took place in the first 12 months of life. White blood cell counts decreased and red blood cell counts, hemoglobin, hematocrit and MCV increased. Calcium, phosphorus and ALP decreased with age, reaching adult values at about 1 year of age. Globulin and total protein increased for the first 1-2 years of life.

**Clinical implication:** Veterinarians should be aware of these differences when interpreting blood tests in young dogs.