Diagnostic Process for Immune-Mediated Hemolytic Anemia

Shauna L. Blois, DVM, DVSc, DACVIM (SAIM)
University of Guelph
Ontario, Canada

In the Literature

Members of the Veterinary and Comparative Clinical Immunology Society Diagnostic Task Force, MacNeill AL, Dandrieux J, Lubas G, Seelig D, Szladovits B. The utility of diagnostic tests for immune-mediated hemolytic anemia. *Vet Clin Pathol*. 2019;48(S1):7-16.

FROM THE PAGE ...

Immune-mediated hemolytic anemia (IMHA) is an important differential for anemia in dogs and cats. Diagnosis relies on identifying signs of an immune-mediated RBC attack and hemolysis in anemic patients.

In this study, a survey was distributed to clinicians and veterinary technologists to discover which tests were being used to diagnose IMHA in veterinary patients. The study authors then performed a literature review to describe the utility of different tests that can support an IMHA diagnosis.

Most survey respondents were found to perform saline agglutination or Coombs tests to detect antierythrocyte antibodies. Autoagglutination of erythrocytes can occur when immunoglobulin is present on erythrocyte surfaces. The saline agglutination test is a useful method to identify RBC agglutination, which should not be present in a normal patient. This test can be performed by mixing 1 part RBCs with 4 parts saline to help disperse strong rouleaux that can cause false-positive results. True autoagglutination is most reliably identified after washing the cells 3 times in saline. In patients that do not demonstrate autoagglutination, a direct antiglobulin test should be used to identify presence of antiglobulin on erythrocyte surfaces.[1] This is most commonly achieved with a Coombs test performed at both 39.2°F (4°C) and 98.6°F (37°C).

In addition to these tests, a routine minimum database contains much information that can raise suspicion for IMHA. CBC will not only identify anemia but also signs of regeneration in many IMHA patients. Microscopic review of a fresh blood smear can identify evidence of ghost cells, which are consistent with hemolysis, and/or spherocytes, which are consistent with immune-mediated RBC lysis in dogs. Visual inspection of the plasma from a packed cell volume analysis, serum chemistry profile, and urinalysis can offer additional information regarding hemolysis (eg, the presence of hyperbilirubinemia, bilirubinuria, hemoglobinemia, and/or hemoglobinuria).

Hyper- or hypocoagulability can be found in patients with IMHA. Thrombocytopenia is a common finding in dogs with IMHA and could be a result of consumptive processes (eg, disseminated intravascular coagulation) or concurrent immune-mediated thrombocytopenia. If thrombocytopenia or signs of coagulopathy are identified, further coagulation testing is recommended.

… TO YOUR PATIENTS

Key pearls to put into practice:

1. Pet owners should be informed that a diagnosis of IMHA relies on findings from several tests to identify the anemia, hemolysis, and immune-mediated RBC destruction present in this disorder.
2. CBC results, including evaluation of a fresh blood smear, can identify many of the features consistent with IMHA, including anemia, changes in plasma color in the packed cell volume tube, and/or presence of spherocytes (dogs only) or ghost cells.
3. If autoagglutination is not present on the saline agglutination test, a Coombs test can provide further evidence for diagnosis of IMHA.

Reference

1. Garden OA, Kidd L, Mexas AM, Chang YM, Jeffery U, Blois SL. ACVIM consensus statement on the diagnosis of immune-mediated hemolytic anemia in dogs and cats. *J Vet Intern Med.* 2018;33(2):313-334.