

FOCUS The Hair of the Dog

Along with compatible history and signs, definitive diagnosis of hypercortisolism, an increasingly common canine endocrinopathy, is achieved via a combination of other diagnostic modalities (eg, urine cortisol to creatinine ratio, adrenal function tests, abdominal ultrasonography). In humans, hair cortisol analysis helps assess chronic stress, drug exposure, malnutrition, and hypercortisolism. To determine if this testing method holds any merit in dogs, hair samples from 12 dogs with diagnosed hyperadrenocorticism (HAC) and 10 normal dogs were assayed for cortisol, cortisone, and corticosterone concentrations. Samples were stored at room temperature and assayed using an enzyme immunoassay; median cortisol concentration in the HAC group was 5.6 ng/g, compared with 1.5 ng/g for normal dogs. The content of corticosterone in all samples was 19.8 ng/g; dogs with HAC had higher

values (25.4 ng/g) compared with normal dogs (8.4 ng/g). The median concentration of cortisone in all samples was 52.5 ng/g; dogs with HAC had higher values (65.4 ng/g) than normal dogs (33.3 ng/g). In dogs, cortisol can be measured in blood, urine, feces, and saliva; its measurement in hair may provide a less invasive means for diagnosing HAC.

■ Commentary

Cortisol measurements of hair were investigated as an alternative or adjuvant noninvasive way to document HAC. A great deal of investigation is warranted before this test can be considered a viable and reliable alternative to current tests. Of more interest is application of stress measurement in dogs and cats. How many times have we



read the descriptor in *stressed animals*? Yet, we have no way of measuring or determining stress. The development of hair cortisol concentrations as they correlate (or not) with disease should be followed. This also has great potential for

behavior studies, with direct applicability for measuring changes in management that increase or decrease stress. The latter would be particularly important in shelter animals or in any animal living for long periods in captivity.—Karen A. Moriello, DVM, DACVD

■ ■ Source

Measurement of cortisol in dog hair: A noninvasive tool for the diagnosis of hypercortisolism. Ouschan C, Kuchar A, Möstl E. *VET DERMATOL* 24:428-e94, 2013.

Transfusion Considerations

One potential risk in administering stored RBC concentrates is a transfusion reaction. Leukoreduction (LR; ie, removal of WBCs and platelets) before storage can help decrease risk. During storage, RBCs undergo progressive biochemical and biomechanical alterations that lead to the formation of microparticles (MPs), believed to be involved in the pathophysiology of transfusion reactions. In this study, whole blood was collected from 11 dogs; 6 units underwent prestorage LR, and 5 did not. Over 5 weeks, aliquots were collected from each unit and MP concentrations were measured by flow cytometry. At days 0 and 7, there was no difference between the treated and untreated stored blood. However, at days 14, 21, 28, and 35, mean MP counts increased 1.8-fold and 5.5-fold for treated and untreated blood, respectively.

■ Commentary

Blood transfusions are becoming more common as private practice develop emergency capabilities. Understanding the various blood products available and making qualitative assessments of which to choose is essential. Although most practitioners are familiar with basic blood typing and crossmatching, the minutiae of blood product storage complications (eg, transfusion-related acute lung injury) may not enter the psyche. This study concerned microparticles, which are the miniature breakdown products of RBCs that occur before collection and during storage as a result of interaction with WBCs. These MPs are implicated in several life-threatening transfusion complications. By applying a simple filtration technique to remove WBCs before storage, investigators were able to significantly reduce the number of

MPs that would have formed during standard storage after 1 week, as compared with nonfiltered controls. It would be wise to consider preparation and storage of any commercially procured blood units before transfusing a critical patient. Review of other factors, including how blood products are delivered to the patient,¹ is recommended.—Ewan Wolff, DVM, PhD

■ ■ Source

Microparticles in stored canine RBC concentrates. Herring JM, Smith SA, McMichael MA, et al. *VET CLIN PATHOL* 42:163-169, 2013.

1. Influence of transfusion technique on survival of autologous red blood cells in the dog. McDevitt RI, Ruaux CG, Baltzer WI. *JVECC* 21:209-216, 2011.

MORE ►