signs of minor or major hemorrhage and gastrointestinal side effects in any dosing groups. The highest anti-Xa value and longest delayed R of TEG and PT were observed 3 h after the administration of rivaroxaban; however, the anticoagulant effect in TEG and plasma rivaroxaban concentration decreased significantly from 8 h after administration. Inter-individual differences in drug effects were observed as expected, and further experiments to monitor the anticoagulant effects were performed. The results showed that the anti-Xa concentration and point-of-care PT ratio were strongly correlated (R = 0.82, $P < 0.001$). R ratios of RapidTEG-TEG, TF100-TEG, and TF3700-TEG showed a significant correlation with rivaroxaban concentration measured using the anti-Xa assay (R = 0.76, $P < 0.001$; R = 0.82, $P < 0.001$; and R = 0.83, $P < 0.001$, respectively).

Overall, 1.5–1.9 times delay of the PT and R values of TEG 3 h after rivaroxaban administration is required to achieve therapeutic anti-Xa concentrations of rivaroxaban in canine plasma. TEG using tissue factors as activators and point-of-care PT validation for rivaroxaban can be used for therapeutic monitoring of rivaroxaban and determining individual rivaroxaban doses in dogs.

HM07

Influence of Canine Donor Plasma Hemostatic Protein Concentration on Quality of Cryoprecipitate

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Cryoprecipitate (CRYO) is a plasma component containing high concentrations of factor VIII (FVIII), von Willebrand factor (VWF), and fibrinogen. Due to wide inter-individual variations in plasma FVIII and VWF levels among healthy dogs, there is concern about uniformity and standard potency of CRYO to treat dogs with hemophilia A or VWD. While Greyhounds are commonly used as blood donors, previous studies have documented lower plasma VWF and fibrinogen content in Greyhounds compared to non-Greyhounds. Greyhound plasma, therefore, may not yield high potency CRYO. The objectives of this study were to determine if: 1) plasma hemostatic protein content is a good predictor of CRYO potency; 2) there is a difference in quality of CRYO prepared from Greyhounds versus non-Greyhounds; and 3) canine CRYO produced by our protocol meets human blood banking standards.

A 450 mL unit of blood was collected from 20 Greyhounds and 20 non-Greyhounds enrolled in a blood donor program. CRYO was prepared from fresh frozen plasma (FFP) using standard methods; all blood component volumes were recorded. Aliquots of FFP and CRYO from each unit were analyzed for FVIII, VWF, and fibrinogen content. Recovery, the percentage of total factor content in FFP retained in CRYO unit, was calculated for each factor.

There was a positive correlation between FVIII, vWF and fibrinogen concentration in FFP and their respective factor content in CRYO ($P < 0.0001$, σ 0.723-0.763). Median recovery was greatest for VWF (65%), followed by fibrinogen (49%) and FVIII (33%), with no differences between Greyhounds and non-Greyhounds. There was no difference in median FVIII (95 and 94 IU/unit) or vWF (210 and 264 IU/unit) content of CRYO units when comparing Greyhounds and non-Greyhounds, respectively. However, median fibrinogen content in CRYO was less in Greyhounds (223 mg/unit) compared to non-Greyhounds (332 mg/unit) ($P = 0.0005$). Nevertheless, there was no difference between Greyhounds and non-Greyhounds for the number of CRYO units meeting human blood banking standards for any of the 3 hemostatic proteins: VWF, 19 Greyhounds and 18 non-Greyhounds (CRYO from 2 VWF-deficient Dobermans did not meet standard); fibrinogen, 17 Greyhounds and 20 non-Greyhounds; and FVIII, 8 Greyhounds and 11 non-Greyhounds.

In conclusion, the factor content in donor FFP is strongly associated with CRYO potency, suggesting that pre-screening of blood donors may enhance CRYO quality. CRYO prepared from Greyhounds is not inferior to that from other breeds, justifying use of their plasma for preparation of CRYO. While most CRYO units met human blood banking standards for VWF and fibrinogen, variable recovery of FVIII resulted in approximately 50% of the CRYO units having FVIII content below human standards. Control of bleeding in dogs with hemophilia A may require transfusion to effect due to nonuniform FVIII potency of single CRYO units.

HM09

Nucleated Erythrocytes and Anemia in Dogs with Systemic Inflammatory Response Syndrome: Could they Affect Outcome?

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During Systemic Inflammatory Response Syndrome (SIRS) a release of inflammatory mediators occurs and hematological modifications are common. The study's aim was to evaluate anemia and nucleated RBC (NRBCs) in canine SIRS compared to the severity of illness and outcome.

This retrospective study included the following dogs: 90 with SIRS, 50 healthy, 50 with chronic diseases. SIRS grading was based on how many criteria were fulfilled. $APPLE_{fast}$ score was allocated in SIRS dogs. Mortality rate was assessed at 7 and 15 days after admission. Hemolytic or hemorrhagic disorders were excluded. SIRS grading and $APPLE_{fast}$ score groups were compared to the outcome. Types of anemia and NRBCs counts were evaluated in three study populations and to the outcome.

$APPLE_{fast}$ scores >25 (p = 0.03) and SIRS grading >2 (p = 0.001) were associated with poor outcome. In SIRS group, anemia was present in 56/90 dogs. The most frequent types of anemia were mild (45%) or moderate (43%), microcytic (55%) or normocytic (41%), and normochromic (93%). Anemia and its severity were associated with poor outcome (p = 0.0197). SIRS group showed worse anemia patterns than the other two groups (p < 0.001). The presence of NRBCs occurred in 22/90 of SIRS dogs and was associated with poor outcome (p = 0.005). NRBCs count were significantly higher in the SIRS group than healthy dogs (p = 0.0007).

Mild-moderate, micro-normocytic normochromic anemia is a frequent finding in canine SIRS. Our results suggest that circulating NRBCs and their amount could be an additional negative prognostic value.

HM10

Rapid Decrease in Prednisolone Dosage Can Cause Early Recurrence of Immune-Mediated Thrombocytopenia in Dogs

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Primary immune-mediated thrombocytopenia (pIMT) is a common hematologic disorder in dogs. Although immunosuppressive doses of prednisolone can normalize the platelet count in most cases, the high recurrence rate is still a problem. This study was performed to clarify the relationship between tapering of the prednisolone dosage and the time to relapse.

Sixteen dogs treated for pIMT at Hokkaido University Veterinary Teaching Hospital from March 2013 to May 2017 were retrospectively evaluated. A relapse episode was defined as a therapeutic course from remission to relapse. A non-relapse episode was defined as a therapeutic course from remission to cessation of prednisolone. Concurrent immunosuppressive medications were not considered.

In total, 17 relapse episodes and 18 non-relapse episodes occurred while tapering the prednisolone. The median dosage of prednisolone at the time of remission was 2.4 mg/kg/day (range, 1.0–3.7 mg/kg/day). The median dosage of prednisolone at the time of relapse was 0.9 mg/kg/day (range, 0.2–2.5 mg/kg/day). The median remission period was 69 days (range, 8–221 days). A significant negative correlation was present between the tapering rate of prednisolone ($P<0.01$, $r=-0.74$) and the remission period. When the 17 relapse episodes were divided into acute relapse (remission period of ≤60 days, n=7) and delayed relapse (remission period of >60 days, n=10), the tapering rate of prednisolone was significantly higher for the acute relapse episodes than for both the delayed relapse and non-relapse episodes ($P=0.04$ and $P=0.01$, respectively).

These results suggest that a rapid decrease in the prednisolone dosage can cause early recurrence of pIMT.

HM11

Comparison of Fibrinolysis via Thromboelastography in Greyhounds versus Non-Greyhounds

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Greyhounds have several hematologic differences from other breeds of dogs, including higher hematocrit and hemoglobin concentration and lower neutrophil and platelet counts. It has also been observed that some Greyhounds have a propensity to bleed excessively 36-48 hours following minor traumas or routine surgeries. The exact etiology behind this bleeding is unknown however several studies have postulated this may occur due to hyperfibrinolysis. Dynamic viscoelastic testing using thromboelastography (TEG) allows for not only assessment of coagulation but also fibrinolysis. TEG has been performed previously in Greyhounds but no study has investigated fibrinolysis variables via TEG in the presence of tissue plasminogen activator (tPA) in healthy Greyhounds. Therefore, the purpose of this study was to evaluate if Greyhounds appear hyperfibrinolytic as compared to non-Greyhounds.

Tissue factor-activated TEG with tPA added (TF + tPA-TEG) was performed in six healthy client-owned Greyhounds and six healthy laboratory Beagles. For TF + tPA-TEG, reaction time (R), clotting time (K), rate of clot formation (α), maximum amplitude (MA), percent clot lysis 30 and 60 minutes after MA is reached (LY30 and LY60), amount of clot lysis 30 and 60 minutes after MA is reached (CL30 and CL60), maximal rate of thrombus generation (MRTG), time to maximum rate of thrombus generation (TMRTG), total thrombus generated (TG), maximum rate of lysis (MRL), time to maximal rate of lysis (TMRL) and clot lysis time (CLT) were recorded. The hematocrit, platelet count, and fibrinogen were also recorded. An unpaired t-test was performed on R, K, α, MA, LY30, LY60, MRTG, TMRTG, TG, MRL, TMRL, CLT, hematocrit, platelet count, and fibrinogen and a Mann-Whitney *U* test was performed on CL30 and CL60. For all tests, $p < 0.05$ was considered significant.

The α, MA, MRTG, TG, platelet count and fibrinogen were significantly lower and the K and hematocrit were significantly higher in the Greyhounds. There were no statistical differences for R, LY30, CL30, LY60, CL60, TMRTG, MRL, TMRL and CLT between the groups.

As noted in previous studies, the Greyhounds had higher hematocrits and lower platelet counts as compared to non-Greyhounds. Greyhounds appeared significantly hypocoagulable (increased K and decreased α, MA, MRTG and TG) but did not appear hyperfibrinolytic as compared to non-Greyhounds. It is possible that hyperfibrinolysis in Greyhounds may not be related to responsiveness to tPA or that hyperfibrinolysis is not detected via TF + tPA-TEG in the preoperative setting and cannot be used to predict bleeding. Additional studies are warranted to further investigate the mechanism of bleeding appreciated in this breed.

HM12

Viability of Two Platelet Agonist Reagents in Whole Blood Impedance Platelet Aggregometry in Dogs

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Whole blood impedance platelet aggregometry can be performed with several different agonists to evaluate platelet function. Although the manufacturer recommends disposal of stored reagent after 1 month, the viability after reconstitution of these reagents under different storage conditions is unknown. If the reagent viability is stable for long periods of time, assay costs could be decreased dramatically. Therefore, the purpose of this study was to determine the viability of reconstituted arachidonic acid (AA) and adenosine diphosphate (ADP) platelet agonists stored under two conditions up to 6 months.

60µl aliquots of reconstituted AA and ADP were stored at -20°C and -80°C monthly for six months. Six healthy staff-owned dogs were enrolled for the study. A physical examination, complete blood count (CBC), diagnostic panel, and urinalysis were performed in all enrolled dogs. Platelet aggregometry was performed on all dogs using fresh and stored aliquots of AA and ADP reagents on the same day. The