

## **ABSTRACT #172**

**EVALUATION OF HYPERCOAGULABILITY USING THROMBOELASTOGRAPHY (TEG®) IN DOGS WITH PROTEIN LOSING ENTEROPATHY.** L.V. Goodwin, R. Goggs, D.L. Chan, K. Allenspach. Department of Veterinary Clinical Sciences, Royal Veterinary College, University of London, UK.

Protein losing enteropathy (PLE) in dogs has anecdotally been associated with an increased risk of thromboembolic disease; however there is limited published evidence to support this association. The aim of this study was to determine whether dogs with PLE are hypercoagulable and if present, to characterize the nature of the hypercoagulable state using thromboelastography (TEG) in combination with conventional coagulation tests.

Fifteen client-owned dogs with PLE were prospectively enrolled. PLE was diagnosed on the basis of a history of gastrointestinal disease, panhypoproteinemia, exclusion of hepatic dysfunction and proteinuria and histopathological confirmation of a disease process associated with PLE. Dogs with PLE were scored using the canine chronic enteropathy clinical activity index (CCECAI). Assays included prothrombin time (PT), activated partial thromboplastin time (aPTT), D-dimers, fibrinogen, antithrombin (AT) activity and recalcified, unactivated TEG. Values for reaction time (R), clot formation time (K), clot formation angle ( $\alpha$ ) and maximum amplitude (MA) were recorded from TEG tracings. TEG tracings were compared with those obtained from 30 healthy control dogs (HC) of various breeds. A subset of 9 PLE patients were reassessed 4-24 days after initiation of immunosuppressive treatment for IBD. Wilcoxon Signed Rank tests were used to compare variables from PLE dogs with those from HC and to compare pre-and post treatment values in dogs with PLE. P values <0.05 were considered significant.

When compared to HC, all dogs in the study were significantly hypercoagulable with decreased R (PLE: median 7.8, range 2.4-11.2; HC: 14.1, range 9.1-20.3), decreased K (PLE: median 2.5, range 0.8-5.2, HC: 8.3, range 4.3-13.1), increased  $\alpha$  (PLE: median 56.7, range 38.5-78.3, HC: 25.6, range 17-42.4), and increased MA (PLE: median 68.2, range 54.1-76.7, HC: 44.1, range 33.5-49) (all values  $p < 0.001$ ). AT activity was borderline low in PLE dogs (median 65% (50-121%), reference range 65-145%), however, mean serum albumin concentration was severely decreased, mean 1.67g/dl  $\pm 0.5$  (reference range 2.8-3.5g/dl). Despite significant improvements in serum albumin (2.31g/dl  $\pm 3.5$ ,  $p = 0.01$ ) and CCECAI (pre-treatment: median 12 (6-17), post-treatment: 3 (0-8),  $p = 0.003$ ), all 9 dogs re-examined remained hypercoagulable based on TEG.

Our data demonstrates that dogs with PLE are in a hypercoagulable state, which cannot be solely attributed to loss of AT but may be multifactorial in origin. Despite a good clinical response to treatment, dogs with PLE remained hypercoagulable and may therefore continue to be predisposed to thromboembolic complications even after clinical improvement.