Assessment of the Coagulation Profile in Canine Multiple Myeloma: A Cohort Investigation in 234 Dogs

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Hypercoagulability in canine multiple myeloma (MM) as described in humans has not been reported and prognostic factors related to hemostasis have not been investigated.

Aims of this study were: to describe the haemostatic profile in dogs with MM, to detect a possible hypercoagulable state, and to assess whether coagulation parameters have prognostic value. Haemostatic alteration at the initial visit of dogs affected by MM (Group 1, n = 78) were retrieved from the electronic data-base (P.O.A. System-Plus 9.0®) of the San Marco Veterinary Clinic, between 2002–2015. Dogs with MM met the following criteria: bone marrow plasma cells ≥ 15%, osteolytic lesions, serum mono-biclonal gammopathy and extensive coagulation profile including platelet count, aPTT, PT, fibrinogen, thrombin time (TT), FPDs, D-Dimer and antithrombin (AT). Two groups of dogs individually matched for age, breed, and sex were used as controls: healthy dogs (Group 2, n = 78) and sick dogs without MM (Group 3, n = 78). In addition, the hemostatic profile between clinical bleeding (B-MM, n = 45) (e.g., gum bleeding, epistaxis) and no-clinical bleeding (NB-MM, n = 33) dogs with MM was evaluated.

Kruskal-Wallis and Wilcoxon-Mann-Whitney tests were used to compare groups. Risk to death at 90 days after diagnosis within B-MM and NB-MM dogs was evaluated by Pearson's X^2 test. ROC curves were used to identify the best analyte to predict death.

Prothrombin time and aPTT were increased (p = 0.001) in Group 1 vs groups 2 and 3, TT was increased (p = 0.001) in Group 1 vs 3. The platelet count and AT concentration were decreased in Group 1 vs groups 2 and 3 (p = 0.001). Fibrinogen concentration was decreased in Group 1 vs 3 (p = 0.01). No differences between Groups 1 vs groups 2 and 3 for FDPs and D-dimer were observed. Platelet count and AT concentrations were decreased in B-MM vs NB-MM (p = 0.04; p = 0.026); PT and aPTT and were increased in B-MM vs NB-MM (p = 0.026; p = 0.03). No differences between B-MM and NB-MM were observed for TT, FDPs, D-Dimer. B-MM dogs showed lower mortality rate in respect to NB-MM patient (p < 0.028). The TT resulted the best haemostatic analyte in predicting death in dogs affected with MM (p < 0.04; AUC 64%; 95% CI = 0.48–0.82).

Primary and secondary haemostasis are compromised in dogs with MM while tertiary haemostasis appears unaffected. The hypercoagulable state, opposite to humans, is unlikely in dogs with MM. Surprisingly, dogs with MM and clinical bleeding apparently have protective effect against death. The prediction of mortality in canine MM was related to TT.

DISCLOSURES

No disclosures to report.

SPEAKER INFORMATION
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