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Hemostasis in breeding bitches
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Catastrophic hemorrhage is a frequent complication of surgery performed on bitches in heat or during C-section even in those bitches without genetic clotting disorders. Standard coagulation assays rarely predict which breeding bitches are likely to suffer excessive hemorrhage. We sampled normal breeding Labrador Retrievers (n=9) and Standard Poodles (n=3) from two local breeding kennels during heat (H, proestrus or estrus), immediately after whelping (W, 4 to 18 hours after birth of the last puppy) and at weaning (A, 39 to 52 days post-whelping). Tests performed in the Hemostasis Laboratory at the OVC included a thromboelastogram on citrated native blood (TEGCN) and another with kaolin (TEGCK); prothrombin time (PT); activated partial thromboplastin time (APTT) and citrated plasma concentrations of D-dimer; antithrombin (ATIII); and fibrinogen. Measurements of the concentration of ionized calcium in heparinized whole blood and complete blood counts (CBC) were performed at the Animal Health Laboratory at the Ontario Veterinary College. Twelve different bitches were sampled (n=8 H; n=8 W; n=9 A) with five bitches sampled at all three time periods. No effect of repeated measures was found using the Akaike Information Criterion. Any data found to be non-normal using residuals analysis, were transformed prior to analysis. No differences in PT (p>0.07) were detected among the groups or within the bitches themselves. APTT was shorter in H compared to both W and A (p=0.0092 and 0.0321, respectively), but W was not different from A (p=0.4378). The mean APTT of the W group (12.26 sec.) was slightly longer than our laboratory’s normal range (10 to 12 sec). The W group was hypercoagulable in both TEGCN and TEGCK (p<0.01) compared to both H and A groups, and the difference between H and A approached significance (p=0.07) with H being hypercoagulable compared to A. Ionized calcium was not significantly different among groups or within bitches with all values being in the normal range. Hematocrits, RBC and hemoglobin concentrations were lower in W (p< 0.05) compared to both H and A which were not different from one another (p>0.06). Platelet concentrations were increased in W and A compared to H (p<0.002), but were not different from one another (p=0.43). Plasma fibrinogen concentration was increased (p<0.0003) in W compared to both H and A, but fibrinogen in A was also higher (p<0.03) than H. D-dimer concentration was higher in W (p<0.03) compared to A, but not different from H (p=0.09) and H and A did not differ (p=0.56). ATIII concentration in W was lower (p<0.01) than both H and A which were not different from each other (p=0.97). Ongoing studies will further elucidate the hemostatic condition of breeding bitches at various stages of their cycles. The hypercoagulability found at whelping can lead to thromboses or disseminated intravascular coagulation and death. Knowing about this physiologic hypercoagulability and differences in hemostatic parameters of whelping bitches, veterinarians should be able to more precisely apply hemorrhage treatment and prevention strategies in bitches undergoing Cesarean sections or naturally whelping.

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