

Brachycephalic Syndrome & Hypercoagulability in Dogs

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In the Literature

Crane C, Rozanski EA, Abelson AL, deLaforcade A. Severe brachycephalic obstructive airway syndrome is associated with hypercoagulability in dogs. *J Vet Diagn Invest.* 2017;29(4):570-573.

FROM THE PAGE ...

Brachycephalic obstructive airway syndrome has features similar to obstructive sleep apnea in humans. Both syndromes predispose patients to chronic airway obstruction and can lead to chronic intermittent hypoxia.

Humans with obstructive sleep apnea have increased mortality risk due to possible development of cardiovascular (eg, myocardial infarction, arrhythmias, pulmonary hypertension, systemic hypertension) and thromboembolic disorders,^{1,2} which are thought to be associated with hypercoagulability. In one study, it was suggested that clinically healthy bulldogs develop a hypercoagulable state similar to human patients with obstructive sleep apnea.³

Hypercoagulability is a blood coagulation abnormality that increases the risk for blood clots in the arteries or veins. Traditional coagulation tests (ie, prothrombin time, activated partial thromboplastin time, activated coagulation time) do not typically detect a hypercoagulable state.⁴

Thromboelastography, a viscoelastic method for coagulation evaluation, is commonly used in human and veterinary patients. Thromboelastography can provide data about the entire coagulation system and assist in evaluation for hypercoagulability, hypocoagulability, and fibrinolysis disorders.^{4,5} It produces a standardized tracing with components that represent different stages and quality of clot formation and fibrinolysis.

This pilot study evaluated thromboelastography parameters in 5 severely affected (grade 3)⁶ dogs with brachycephalic obstructive airway syndrome (3 pugs, 1 Pekingese, and 1 bulldog) and in a control group (Labrador retrievers).⁷ Profound hypercoagulability and delayed fibrinolysis were identified in all severely affected dogs as compared with controls.

... TO YOUR PATIENTS

Key pearls to put into practice:

- 1** A hypercoagulable state predisposes dogs and cats to pulmonary thromboembolic disease as well as systemic arterial and venous thrombosis. Hypercoagulability is common in patients that have immune-mediated hemolytic anemia, heart disease, protein-losing enteropathy/nephropathy, Cushing's disease, and different forms of neoplastic diseases. Medications (eg, clopidogrel, aspirin, heparin) to prevent arterial and venous thrombosis may be required, depending on case specifics.
- 2** Although this pilot study was small, the results seemed to suggest that severely affected brachycephalic dogs (ie, those that exhibit moderate-to-severe inspiratory effort with noise and moderate-to-severe respiratory distress) may be hypercoagulable. Further research is needed regarding clinical consequences of a hypercoagulable state in brachycephalic dogs.
- 3** Thromboelastography is a point-of-care test that can detect a hypercoagulable state. Brachycephalic dogs with clinical signs suggestive of thromboembolic disease (eg, respiratory distress, paralysis of thoracic or pelvic limbs with cold extremities) may benefit from evaluation at a facility where thromboelastography can be performed. For brachycephalic obstructive airway syndrome patients with suspected thromboembolic disease, treatment with medications that may prevent further clots may be considered.

References

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