Nebulization of epinephrine to reduce the severity of brachycephalic obstructive airway syndrome in dogs

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Abstract

Objective: To determine the preoperative and postoperative effect of nebulized epinephrine on brachycephalic obstructive airway syndrome (BOAS) severity in dogs.

Study design: Prospective clinical study.

Sample population: Thirty-one client-owned pugs, French bulldogs, and English bulldogs with moderate to severe BOAS.

Methods: Whole body barometric plethysmography was used to determine BOAS severity (BOAS index; 0%–100%) prior to and after nebulization with 0.05 mg/kg epinephrine diluted in 0.9% saline preoperatively. The same protocol was repeated postoperatively (within 24 hours of surgery).

Results: Five dogs were excluded because they did not tolerate nebulization, and postoperative data were available for 13 dogs. Epinephrine nebulization resulted in a decreased BOAS index across all breeds of dog both before (9.6% [3.1% to −30.2%], n = 26) and after surgery (14.3% [0.9% to −24.3%], n = 13). The preoperative reduction in BOAS index was greater (17.3% [1.8% to −27.4%]) in dogs with a baseline BOAS index >70% (P = .006) and in pugs (16.9% [0.8% to −27.4%]) compared with French bulldogs (5.2% [3.1% to −30.2%], P = .03). Simple linear regression was used to identify a positive relationship between baseline BOAS index and reduction in BOAS index for pugs (n = 10, P = .001). Nausea was noted as a side effect in four dogs.

Conclusion: Nebulized epinephrine reduced the BOAS index of dogs in this study. This effect was clinically significant in preoperative dogs with a BOAS index >70% and in dogs recovering from surgery.

Clinical significance: This study provides evidence to support the use of nebulized epinephrine in the perioperative management of BOAS-affected dogs.

Into:
→ BOAS surgery → numerous surgical complications as Result from inflammation and edema
→ Severe inflammation can lead to dyspnea and hypoxemia, requiring interventions
→ Whole-body barometric plethysmography (WBBP) is a diagnostic tool that provides objective, noninvasive, respiratory assessment in fully conscious and minimally restrained dogs.
→ it eliminates the requirement for a face mask, which is often poorly tolerated in these dogs when they are conscious.

→ Brachycephalic obstructive airway syndrome index, a measure of relative BOAS severity, can be calculated from the WBBP respiratory variables and has been used for diagnosis of BOAS as well as evaluation of surgical outcome. The BOAS index is an ascending scale ranging from 0% to 100%, with 100% indicating severe BOAS

Goal of this study:
→ to determine the effect of nebulized epinephrine on BOAS severity in dogs both preoperatively and postoperatively. In addition, any side effects of nebulized epinephrine are reported.

MM:
→ A first WBBP was done. Each dog was nebulized with 0.05 mg/kg epinephrine. A second → WBBP test was then performed immediately after the nebulization.
→ The procedure was then repeated postoperatively (within 24 hours of surgery) for any dogs in which the investigations would not negatively impact their recovery and the investigators were available. Functional BOAS grading was not repeated because of clinical concerns regarding the potential exercise-induced stress in dogs after surgery

Results:
→ According to WBBP, 15 dogs had a BOAS index ≤70%, and 11 dogs had a BOAS index 70%. Dogs with a baseline BOAS index >70% had a median reduction of 17.3% after nebulization , while those with a baseline BOAS index ≤70% had a median reduction of 6.2%

→ There was a difference between these two groups. There was an association between baseline BOAS index and change in BOAS index after nebulization, providing evidence that dogs with a higher baseline BOAS index had a larger reduction in BOAS index after nebulization

→ The median reduction in BOAS index (prenebulization) after surgery compared with the baseline BOAS index prior to surgery was 2.4%, although five dogs had an increased BOAS index. Within the postoperative cohort, the median reduction in BOAS index after nebulization was 14.3%

TL/DR
→ nebulized epinephrine reduces airway obstruction in severely affected dogs with BOAS preoperatively and in most dogs with BOAS postoperatively. Recorded side effects of this technique were minimal.

Outcomes of dogs with progressive myelomalacia treated with hemilaminectomy or with extensive hemilaminectomy and durotomy

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Abstract

Objective: To evaluate the ability of extensive hemilaminectomy and durotomy (EHLD) to control progressive myelomalacia (PMM) in dogs.

Study design: Retrospective clinical study.

Animals: Twenty-eight client owned dogs that underwent EHLD (n = 10) or HL alone (n = 18).

Methods: After diagnosis by MRI, dogs were immediately treated with HL alone or EHLD at the site of intramedullary hyperintensity on T2-weighted (T2W)-MRI. Medical records were retrospectively reviewed. Follow-up data were collected via telephone interviews with the referring veterinarian and a standardized questionnaire. Postoperative survival outcome between groups was compared (log-rank test) by using Cox's proportional hazard analysis with baseline characteristics entered as covariates.

Results: The survival rate was higher in the EHLD group (P = .03) compared with the HL-alone group. Eleven of 18 dogs treated with HL survived, while seven of 18 dogs died (median, 5 days after surgery). In the EHLD group, 10 of 10 dogs survived postoperatively. Baseline characteristics were not associated with postoperative survival outcomes. According to multivariate analysis, EHLD was the independent factor associated with an increase in survival rate (P = .0002).

Conclusion: EHLD durotomy at the intramedullary hyperintense region on T2W-MRI improved the survival rate of dogs with PMM compared with dogs treated with standard HL.

Clinical significance: This study provides evidence that supports treatment with EHLD in dogs with PMM. Additional prospective studies are required.

Systematic review of the treatment options for pericardial effusions in dogs

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Abstract

Objective: To evaluate the evidence for the conservative and surgical management of pericardial effusions for neoplastic and idiopathic etiologies in dogs.

Study design: Systematic review.

Sample population: Peer-reviewed English-language articles describing the treatment and outcome of naturally occurring pericardial effusion in domestic dogs.

Methods: A literature search was performed with PubMed, Cab Abstracts, Scopus, and Agricola in August 2019 for articles describing pericardial effusion treatment in dogs. Inclusion criteria were applied, and articles were evaluated for reported outcome and level of evidence by using The Oxford 2011 Levels of Evidence, a previously described hierarchical system, and GRADE (Grading of Recommendations, Assessment, Development and Evaluation).

Results: One hundred eight of the 641 unique articles that were identified and evaluated met inclusion criteria. Most articles included were case studies (68.2%) or retrospective case series (25.2%), with all articles providing a low level of evidence. The articles had inconsistent inclusion criteria, outcome measures, and follow-up, making comparison of outcomes difficult.

Conclusion: Because of the low quality of evidence of the studies included in this systematic review and the variability of the outcomes, there is not sufficient evidence to recommend one treatment option rather than another.

Clinical significance: There is a requirement for higher quality evidence such as randomized controlled trials and prospective comparative cohort studies. Standardization of outcome measures reported for each treatment option and disease process studied will allow for better comparison of outcomes between studies.