Esophageal Hiatal Size in Brachycephalic Breeds

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In the literature

Conte A, Morabito S, Dennis R, Murgia D. Computed tomographic comparison of esophageal hiatal size in brachycephalic and non-brachycephalic breed dogs. *Vet Surg*. 2020;49(8):1509-1516.

FROM THE PAGE ...

The gastroesophageal junction (GEJ) is an important anatomic region composed of intrinsic and extrinsic components that help prevent gastroesophageal reflux (GER). These components (ie, lower esophageal sphincter [LES], esophageal hiatus [EH], diaphragmatic crura) work to create a high-pressure zone at the GEJ that prevents GER. In humans, enlargement of the EH has been correlated with sliding hiatal hernia, decreased LES pressure, and increased frequency of GER.[1,2] The aim of this retrospective study was to characterize the EH via CT evaluation in brachycephalic and nonbrachycephalic dogs and to determine whether a difference exists that may predispose brachycephalic breeds to GER and sliding hiatal hernia.

Medical records of pet dogs that received thoracic and abdominal CTs were reviewed and divided into 2 groups. Group 1 consisted of brachycephalic breeds presented for upper airway, respiratory, and gastroesophageal conditions. Group 2 was composed of nonbrachycephalic breeds presented for reasons unrelated to respiratory or gastroesophageal conditions. Axial images of the EH in each dog were combined to determine the circumference; a ratio of the cross-sectional areas of the EH and descending aorta (Ao) was then calculated (ie, EH:Ao ratio). Absolute EH measurements were also compared in weight-matched dogs from both groups.

Dogs in group 1 had a significantly higher EH:Ao ratio than dogs in group 2. This difference reflected significantly larger EH areas and smaller Ao dimensions in dogs in group 1. Further comparison of the weight-matched groups revealed that group 1 had a significantly larger EH area as compared with group 2.

Enlarged EH may be an additional anatomic difference that could explain why brachycephalic dogs have an increased risk for GER, sliding hiatal hernia, regurgitation, and aspiration pneumonia.[3-5] This study did not assess EH function, and it is unknown whether enlarged EH alone leads to decrease in pressure across the GEJ. Of clinical importance is the increased risk brachycephalic breeds have for anesthetic complications, most commonly regurgitation and aspiration pneumonia.[3,4] Many premedications and inhalant anesthetics decrease LES tone and gastric pH, which can further increase the risk for GER.[6-9] Prolonged fasting for general anesthesia and surgery is also a risk factor for GER in humans[10] and dogs.[9,11] It is thus prudent to consider administration of antacids, prokinetics, and antiemetics—along with avoidance of prolonged fasting and use of certain anesthetic drugs—to help maintain LES tone, improve gastric motility, and decrease gastric secretions and acidity in brachycephalic dogs undergoing general anesthesia.[3-5,8,9,11]

… TO YOUR PATIENTS

Key pearls to put into practice:

1 Brachycephalic dogs are at increased risk for GER, sliding hiatal hernia, regurgitation, and aspiration pneumonia. Enlarged EH may be a contributing factor.

2 Brachycephalic dogs undergoing general anesthesia have higher morbidity and mortality rates than nonbrachycephalic dogs. Careful selection of anesthetic drugs, rigorous monitoring throughout the perioperative and postanesthetic periods, and quick staff intervention in case of a postoperative complication are required.

3 Pre-emptive treatment with antacids, prokinetics, and antiemetics may improve anesthetic outcomes in brachycephalic dogs. Consideration should be given to feeding a canned food meal at half the daily rate ≈3 hours prior to surgery.

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