PROCEEDINGS

Pre-BSAVA Virtual Spring Meeting 2021

Tuesday March 23rd/ Wednesday March 24th
18.30-20.30
Tuesday 23rd March 2021

Dr Anya Morrissey BSc(Hons), BVetMed, PGDip VCP, MRCVS
Any Morrissey graduated from the Royal Veterinary College in 2016 and completed a General/Surgical Internship at London Vet Specialists in 2017. After working as an emergency veterinarian for two years, she went on to complete the Small Animal Rotating Internship at the Royal Veterinary College in 2020 and is currently working towards a post-graduate certificate in Small Animal Surgery.

Dr James Guillem CertAVP (VDI) MRCVS
After graduation in 2010 in Madrid, James worked at several first opinion practices in the UK. In 2018 he joined the University of Liverpool Small Animal Teaching Hospital to start his small animal diagnostic imaging residency.

Dr Aurore Masson MRCVS
Aurore graduated in 2007 from the National Veterinary School of Toulouse (France). After graduation she completed a rotating internship and two specialized internships in surgery in Toulouse. Subsequently, she worked for four years in a referral and emergency private practice in Versailles (France). In 2014, she moved to the UK to work in first opinion practice. She started a diagnostic imaging residency in January 2021 at the National Veterinary School of Maisons-Alfort (France).

Dr Susann Dressel Dr. med. vet
Susann graduated from Justus-Liebig-University Giessen, Germany in 2014. Following graduation, she worked at the Radiation Oncology, Vetsuisse Faculty, University Zurich during which she completed her doctoral thesis. Subsequently, she went on to complete a small animal diagnostic imaging internship at Vetimage Diagnostik GmbH, Switzerland. In 2019, she begun a diagnostic imaging residency at the Clinic for Diagnostic Imaging, Vetsuisse Faculty University Zurich, Switzerland.
USE OF CT SINOGRAPHY IN 27 DOGS AND 1 CAT


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**Introduction**: Sinography following survey radiography in dogs with a draining sinus aids determination of the extent of a tract and presence of foreign material. Use of sinography in combination with computed tomography (CT) in animals has been sporadically reported.

**Methods**: Retrospective review of clinical and imaging findings in 27 dogs and one cat that underwent CT sinography to investigate a draining tract. Pre- and post-intravenous (IV) contrast CT series were compared with CT sinography in each patient.

**Results**: Median duration of clinical signs before referral was 85 days (range 2 – 1478 days). The most commonly reported clinical signs were swelling (14/28, 50%) and regional pain (5/28, 18%). Sinuses affected the head (14/28, 50%), thoracic or abdominal wall (7/28, 25%), sublumbar muscles (4/28, 14%) and a distal limb (3/28, 11%). CT sinography showed tract extension beyond that seen on prior CT in 6 (21%) cases and communication with a cavity (fistula) in 2 cases (7%). Sensitivity for suspected foreign material was higher in pre-contrast images (31%) than CT sinography (23%). Of the tracts managed surgically (22/28), 13 (59%) cases resolved, 6 (27%) persisted or recurred after surgery, and 3 (14%) were lost to follow-up. All foreign bodies suspected on CT were later confirmed, but CT plus sinography failed to identify foreign bodies found at surgery and histopathology in 9 additional cases.

**Conclusions**: CT sinography provides limited additional information about the extent of draining tracts compared to pre- and post-IV contrast CT images and did not increase sensitivity for foreign bodies.
CT ASSESSMENT OF BRONCHIAL ABNORMALITIES IN BRACHYCEPHALIC DOGS WITH AND WITHOUT BOAS IN COMPARISON WITH NORMAL DOGS


University of Liverpool Small Animal Teaching Hospital, Leahurst Campus, Wirral, CH64 7TE, United Kingdom.

Introduction: A relationship between bronchial collapse and brachycephalic patients has been previously established. However, there is no evidence in the current literature that relates brachycephalic dogs, with or without signs of obstructive airway syndrome (BOAS), with increased bronchial wall thickness. The aim of this study was to assess bronchial wall thickening and bronchial collapse in brachycephalic dogs with or without BOAS on thoracic computed tomography (CT) and compare them with non-brachycephalic dogs.

Methods: Patients were divided into three groups: dogs with BOAS, an asymptomatic brachycephalic dogs (ABD) group and a control group of non-brachycephalic dogs. Bronchial thickening and collapse were subjectively identified and graded by a single observer, blinded to patient history, signalment and previous CT reports. Descriptive statistics were calculated for relevant variables. Univariable and multivariable analysis were performed to evaluate possible associations with both bronchial thickening and bronchial collapse.

Results: A total of 84 dogs were retrospectively recruited. Thirty dogs in the BOAS group, 26 in the ABD group and 28 in the control group. Bronchial wall thickening was identified in 93.3% of dogs within the BOAS group, 59% in the ABD group and 35% in the control group. Univariable analysis identified several variables with a potential relationship with bronchial thickening, however after multivariable analysis, only the group (P=0.0001) and weight (P=0.027) showed a significant association with bronchial thickening.

Bronchial collapse was identified in 56.7% of dogs within the BOAS group, 62.9% in the ABD group and 10.7% in the control group. Multivariable analysis showed that only the group had a significant relationship with bronchial collapse (P=0.001).

Discussion: A relationship between brachycephalic dog breeds and weight with bronchial wall thickening was established. However, further studies are required to investigate the cause of the bronchial wall thickening. Bronchial collapse was also related with brachycephalic breeds, as previously reported.
CLINICAL AND DIAGNOSTIC IMAGING FINDINGS IN DOGS WITH ATRIAL APPENDAGE ANEURYSM: 7 CASES (2014 – 2019)


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2Small Animal Teaching Hospital, University of Liverpool – Institute of Veterinary Science, Chester high road, Neston CH64 7TE

Introduction: To describe clinical and diagnostic imaging findings, especially computed tomography, of atrial appendage aneurysms in dogs.

Methods: Medical records of the Small Animal Teaching Hospital were searched to identify dogs with a presumptive diagnosis of left (LAAA) or right (RAAA) atrial appendage aneurysm. Signalment, history, examination findings, diagnostic test results, and imaging procedures were reviewed. Archived diagnostic images were retrieved and retrospectively evaluated by two board-certified radiologists and a board-certified cardiologist. Data analysis was descriptive.

Results: Seven dogs with a presumptive diagnosis of LAAA or RAAA that had computed tomography studies were included. Most affected dogs were male dogs (6/7) with a median age of 8 years old. Six cases were affected with RAAA and one with LAAA. All cases of RAAA were incidental findings. The dog with LAAA presented a syncopal event. All dogs underwent a thoracic computed tomography (CT) examination for various reasons. CT was useful to identify and assess the atrial appendage aneurysm as well as neighbouring structures, although possible pericardial defects could not be visualized. Five dogs had echocardiographic examination, which successfully identified the LAAA and two RAAA.

Discussion: Atrial appendage aneurysm in dogs is a rare condition. This case series is focusing on the imaging findings. RAAA seems to be an incidental finding whereas LAAA could be associated with clinical signs, consistent with the literature. CT seems to be more sensitive than transthoracic echocardiography in the detection of atrial appendage aneurysm in dogs, especially for RAAA.
PERIPORTAL HALO-COMPUTED TOMOGRAPHY SIGN OF PERIPORTAL OEDEMA LIKE LESIONS IN DOGS AND CATS

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Introduction: Many pathologies can occur in the periportal space and manifest as fluid accumulation visible in Computed tomography (CT) images as a circumferential region of low attenuation around the intrahepatic portal vessels (periportal halo). This finding has been described in different types of hepatic (HD) and extra-hepatic disease (EHD) in humans and reflects altered hepatic lymphatic dynamics. In veterinary literature, it has been reported as a non-specific feature correlated to shunts and is of unknown significance. Here, we investigate the prevalence of periportal halo on a large population of dogs and cats and assess the presence of lesions related to HD and EHD.

Methods: This retrospective study includes CT-studies of client-owned animals to evaluate the prevalence over a period of five years. Patients were classified based on the subjective grade and distribution of the periportal halo. Anamnestic, clinical, biochemical and pathological information were analyzed.

Results: 1168 CT examinations were reviewed, and 125/858 (15%) dogs and 4/310 (1%) cats showed a periportal halo. 129 animals (125 dogs, 4 cats) were included, and the halo was classified as mild, moderate and severe respectively in 70 (54.3%), 42 (32.6%) and 17 (13.2%) animals. The halo distribution was generalized in 71/143 cases, localized along the second generation of intrahepatic portal branches in 57/143, and along the first generation only in 1/143. 52/125 animals had morphological liver or vascular abnormalities. Primary HD was confirmed in 27 cases, suspected in 3 and suspected secondary or additionally to a primary EHD in 24 patients. Most cases had an EHD (98/125; 71.4%). Main cause of HD (20/54; 37.0%) and EHD (70/98; 68.2%) was neoplasia. 8.4% animals had no evidence of HD nor EHD.

Conclusions: Periportal halo is non-specific, but it could represent an important hint to underlying HD or EHD. Most patients with halo in this study had an underlying neoplastic disease, both hepatic or extra-hepatic. In contrast to previous literature, only 6 animals had portosystemic shunts.

Contrast-enhanced transverse CT image of the intrahepatic portal vein with a severe periportal halo
**Wednesday 24th March 2021**

**Dr Chantelle Franklin**
Chantelle graduated from the University of Adelaide in 2013 and then worked in general practice for 6 years in both Australia and the United Kingdom. She completed a Post-Graduate Certificate in small animal abdominal ultrasonography from the University of Melbourne in 2018 and became a Member of the Australian and New Zealand College of Veterinary Scientists in small animal radiology in 2019. The same year, she started a Diagnostic Imaging internship at the Queen’s Veterinary School Hospital at the University of Cambridge and was then lucky enough to stay on as a Senior Clinical Training Scholar (Resident) in Diagnostic Imaging from November 2020.

**Dr Jess Sumping BVetMed MRCVS**
After graduation from the Royal Veterinary College Jess completed a rotating internship at Vets Now Referrals, Glasgow. After spending time in general practice, she completed a diagnostic imaging internship at the University of Liverpool and is now in her first year of her residency programme.

**Dr Emilie Paran DVM, MRCVS**
Emilie graduated from Lyon Vet School (France) in 2015. After a rotating and imaging internship, she worked as an ultrasonographer in France before moving to the UK in 2018. In 2019, she started her residency at Glasgow Vet School and is temporarily located at Langford Vets near Bristol.

**Dr Lorraine Peschard MRVS**
Lorraine graduated in Madrid in 2016 and then spent two years in first opinion and referral practice in the UK, before completing a rotating internship at Liège University in 2018. She started her imaging residency in September 2019 at the Queen’s Veterinary School in Cambridge and is thoroughly enjoying it!
PREVALENCE OF HUMERAL INTRACONDYLAR FISSURES IN ASYMPTOMATIC BRACHYCEPHALIC BREED DOGS.

C. Franklin, M. Herrtage, K.P. Harris, M.A. Genain.

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Introduction: Historically, humeral intracondylar fissures (HIF) have been seen predominantly in spaniel breeds. These dogs are thought to be at higher risk of lameness and humeral condylar fracture. Recent publications have brought attention to increased risk of humeral condylar fracture in French Bulldogs. In a manuscript undergoing review, HIF has been noted in a small population of French Bulldogs presenting with humeral condylar fracture in their contralateral limb (In publication: U.W. Strohmeier & K.P. Harris 2021). We therefore hypothesised that HIF may exist in French Bulldogs also and aimed to assess the prevalence of HIF in an asymptomatic population of brachycephalic breed dogs.

Methods: A blinded retrospective study was performed on CT examinations of dogs presenting for an unrelated condition (brachycephalic airway syndrome) and were reviewed by two ECVDI diplomates in a bone window. A classification system was devised to grade the findings, and the image quality as the elbows were not the focus of the imaging acquisition. We considered a Score 1 to be normal, Score 2 to have sclerosis, Score 3 to have a partial fissure and Score 4 to have a complete fissure. We added additional criteria to assess the location of the sclerosis and the presence of other elbow dysplasia abnormalities where possible.

Results: To date, a total of 116 elbows have been reviewed. Of this population 73 were French Bulldogs, 28 were Pugs and the remainder were a mix of other brachycephalic breeds. For the overall population of dogs, we found an overall prevalence of either a partial or complete humeral fissure at 7.3% (CI 2.6-12.0%). The inter-reviewer reliability based on Cohen’s kappa was low at 0.42, however this was largely based on discrepancy between reviewers in Score 1 (normal) and Score 2 (sclerosis) categories. When considering cases assigned to Score 4 (complete fissure) there was complete agreement between assessors. Within the French Bulldog breed, the prevalence of HIF (partial or complete) was higher at 8.2% (CI 4.0-18.5%).

Discussion: This is the first study to our knowledge examining the prevalence of HIF in brachycephalic breed dogs who are asymptomatic and will contribute to the knowledge of this condition in increasingly popular breeds in the community.
SENSITIVITY, SPECIFICITY AND ACCURACY OF ULTRASONOGRAPHY IN THE DETECTION OF LYMPHOMATOUS INfiltrATION OF THE LIVER AND SPLEEN IN DOGS AND CATS WITH LYMPHOMA


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Purpose: To determine the sensitivity, specificity and accuracy of ultrasonography in the detection of lymphomatous infiltration of the liver and spleen in a large population of dogs and cats with lymphoma. The second aim of this study is to determine if specific ultrasonographic features of the liver and spleen in dogs are associated with lymphomatous infiltration or a specific immunophenotype of multicentric lymphoma.

Methods: Blinded retrospective review of ultrasonographic images of the liver and/or spleen in 132 dogs and 29 cats with cytologically or histologically confirmed lymphoma by two board-certified veterinary radiologists.

Results: Ultrasonography had a sensitivity, specificity, accuracy, positive predictive value and negative predictive value of 16.7%, 91.0%, 55.9%, 62.5% and 55.0% for the detection of lymphomatous infiltration of the liver, and 73.1%, 93.9%, 82.6%, 93.4% and 74.7% for the spleen. In dogs, an ultrasonographically normal liver was statistically associated with not having lymphomatous infiltration, leopard-spotted splenic parenchyma and splenomegaly were independently statistically associated with lymphomatous infiltration and leopard-spotted splenic parenchyma was also statistically associated with the B-cell immunophenotype of multicentric lymphoma.

Conclusions: Ultrasonography of the spleen and liver is specific but not sensitive in the detection of lymphomatous infiltration. A leopard spotted splenic parenchyma in dogs is highly specific for lymphomatous infiltration and can also be used to predict immunophenotype of multicentric lymphoma.
MORPHOLOGIC DESCRIPTION OF THE TEMPOROMANDIBULAR JOINT IN ASYMPTOMATIC BRACHYCEPHALIC DOGS USING COMPUTED TOMOGRAPHY

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Introduction: Temporomandibular joint (TMJ) incongruity and morphological variations can result in clinical signs and have also been reported in asymptomatic brachycephalic dogs such as Cavalier King Charles Spaniels (CKCS). The purpose of the present study was to assess the morphology of the TMJ in a group of brachycephalic dogs using computed tomography (CT).

Methods: Asymptomatic French Bulldogs, English Bulldogs, Boxers, CKCSs, Chihuahuas, Lhasa Apso, Pugs, Shih Tzus and Staffordshire Bull Terriers were retrospectively enrolled from a 6-year period. Multiplanar reconstructions of the CT images were used and TMJ morphological grades were determined using an A to C classification system adapted from a previous publication. A grade A was defined as a long retroarticular process extending ventral to the mandibular condyle. Three B categories were defined depending on the length of the retroarticular process and coverage of the mandibular condyle as determined in the transverse images (100% coverage in B1, 50-99% coverage in B2, and 1-49% coverage in B3). Grade C was assigned when the retroarticular process was absent. The intra and inter-observer agreements were calculated.

Results: One hundred fifty-three dogs were included. In the sagittal plane, the mandibular condyle and fossa were respectively rounded and concave in grade A, showed a progressive flattening in grade B and were respectively square and flat in grade C. In the transverse plane, the mandibular condyle was flat in grade A, showed some variations (flat, curved, trapezoid, sigmoid) in grades B and was more likely to be sigmoid in grade C. Pugs and Shih Tzus were more likely to be graded B. French Bulldogs, CKCSs and Chihuahuas were more likely to be graded C. The intra and inter-observer agreements for this TMJ classification system were moderate.

Conclusions: Variations in the TMJ morphology exist in brachycephalic dogs. Marked changes seem to be highly prevalent in French Bulldogs and CKCSs (26.3% and 68.2% respectively in this study) and should be considered a breed variation. The modified TMJ classification described in this study could be used to standardise the assessment of the canine TMJ morphology.
FOLLOW-UP MRI APPEARANCE OF THE SURGICAL SITE IN DOGS TREATED FOR INTERVERTEBRAL DISC HERNIATION
A.-L. Peschard, P. Freeman, M.-A. Genain.

Purpose: To describe the MRI characteristics of the surgical site in dogs that have undergone a previous surgical treatment for intervertebral disc herniation.

Methods: Descriptive retrospective study. All MRIs but one was performed on a low-field MRI magnet.

Results: 25 patients were included, for a total of 53 MRI studies. The mean number of days between surgery and second MRI study was 389 (range 2-1367). Susceptibility artefacts were seen in 6/25 cases (24%), and hindered assessment of the adjacent spinal cord in 4/6 (16% of total cases). Compression of the spinal cord at the surgical site was present in 15 cases and required surgical reintervention in 5/15 cases. In 12 of these 15 cases the disc space where the maximal amount of compression of the spinal cord was found was located at the surgical site: this was caused by extradural disc material (8/12 cases, 66%), bony hyperplasia (1/12 cases, 8%), displacement of an articular process into the vertebral canal (1/12 cases, 8%), and haematoma and inflammatory changes (5/12 cases, 42%). In these 12 cases, follow-up MRI was performed between 2 and 1097 days after surgery (median 61 days). 2 patients in which a left-sided T13-L1 mini-hemilaminectomy was performed subsequently suffered a displacement of the overlying cranial articular process. Tethering of the spinal cord to the surgical site was observed in 6 patients (24%).

Discussion: The appearance of spinal surgical sites on MRI is variable, and compression of the spinal cord at the surgical site is common, even in patients that made a full recovery and relapsed several weeks to months after the initial surgery. Displacement of an articular process following mini-hemilaminectomy has not yet been described as a potential complication but was found in two patients in the present study. Susceptibility artefacts at the surgical site were uncommon on low-field MRI and were not found in the high-field study performed. Contrary to what was suggested in a previous study, postoperative MRI may be the modality of choice if following surgery, a patient fails to recover in a satisfactory fashion or deteriorates neurologically.

![Fig 1. T1 transverse image showing displacement of the left cranial articular process following left-sided mini-hemilaminectomy. A small bony defect in the left lamina of the vertebra is visible ventral to the affected articular process.](image-url)