Evaluation of a novel echocardiographic view for the assessment of the pulmonary artery in dogs

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INTRODUCTION

Echocardiographic imaging of the pulmonary artery can be challenging. Two dimensional (2D) and Doppler evaluation is important especially in assessment of pulmonic stenosis and pulmonary hypertension.

AIM

Evaluation of a novel echocardiographic view to assess the 2D structure and flow across the pulmonary artery (PA).

METHODS

Cases were recruited from routine clinical cardiology cases at a referral hospital. All studies were supervised by a cardiology diploma holder. In each case a full echocardiographic study was undertaken by the same operator. Standard Right Parasternal Short Axis (RPSA) and Left Cranial (LC) views of the PA were obtained and in addition a novel Left Cranial Oblique (LCO) view. 2D video loops of the PA and pulse wave (PW) and continuous wave (CW) Doppler traces of pulmonic flow were

recorded. An independent observer (cardiology Diploma holder) assessed quality using a three point scale. The same observer measured the pulmonic annulus (PAn) diameter and spectral Doppler velocities for each view. The observer was blinded to the identity of the animal and the view. The effect of view, heart rate (HR) and weight on quality, PAn diameter, PW and CW velocities were analysed by regression models. PW and CW velocities were compared using the sign test for medians.

RESULTS

Fifty-one studies were undertaken of which forty-two were included in the final analysis. Nine studies were excluded (arrhythmias, incomplete study). The quality of 2D video loops was better for the RPSA view compared to the other views. Weight and HR were associated with the quality on 2D view. No significant difference was found in quality of spectral Doppler traces between views. Weight was associated with quality of CW traces. Type of view, HR and weight showed significant association with PAn diameter. No association was found between view, HR or weight for PW or CW velocities. CW velocities were significantly higher than PW velocities in every view.

CONCLUSIONS

The novel LCO view can be used as an additional tool for the echocardiographic evaluation of the PA. It produced a comparable quality to other standard views for spectral Doppler traces but lower quality compared with RPSA for 2D. The PAn diameter was different between views. No difference was found in PW or CW velocities between the three views. Velocities were higher in CW mode compared to PW independently of the view.

Epidemiology of canine upper respiratory disorders in brachycephalic and non-brachycephalic breeds attending veterinary practices in England

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Brachycephalic breeds of dog are increasingly popular as companions. Canine brachycephaly has been associated with upper respiratory tract (URT) disorders affecting the nares, tonsils, palate, larynx and trachea, but reliable prevalence statistics remain lacking. This study aimed to use primary-care veterinary clinical data to report prevalence of and evaluate breed associations with URT disorders.

Two hundred dogs were randomly selected from each of three brachycephalic (Bulldog, French Bulldog and Pug) and three common non-brachycephalic terrier breeds (Yorkshire Terrier, Border Terrier and West Highland White Terrier). Individual patient records were reviewed manually to extract information on all URT disorders recorded. Groups were compared using the chi-squared test or Fisher's test as appropriate. Risk factor analysis used multivariable logistic regression modelling with a statistical significance threshold of $P < 0.05$.

The sampling frame included 170,812 dogs attending 96 clinics participating within the VetCompass primary-care veterinary project. During the study, 83 (6.9%) study dogs died. Brachycephalic dogs (median: 8.6 years, IQR: 2.4–10.8) were significantly younger at death than non-brachycephalic dogs (median 12.7 years, IQR 11.1–15.0) ($P < 0.001$). A higher proportion of deaths in brachycephalic breeds (4/24 deaths, 16.7%) compared with non-brachycephalic breeds (0/59 deaths, 0.0%) were associated with URT disorders ($P = 0.001$).

The prevalence of URT disorders in brachycephalic dogs (22.0%, 95% confidence interval (CI): 18.0–26.0) was higher than in non-brachycephalic dogs (9.7%, 95% CI: 7.1–12.3, $P < 0.001$). The prevalence varied significantly between breeds: Bulldogs 19.5%, French Bulldogs 20.0%, Pugs 26.5%, Border

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Terriers 9.0%, West Highland White Terriers 7.0% and Yorkshire Terriers 13.0% ($P < 0.001$). Brachycephalic dogs showed higher prevalence than non-brachycephalic dogs for certain URT disorders: brachycephalic obstructive airway syndrome (BOAS) ($P < 0.001$), laryngeal disorders ($P = 0.033$), nares/nasal cavity disorders ($P < 0.001$) and palate disorders ($P < 0.001$). After accounting for the effects of age, bodyweight,

sex, neutering and insurance, brachycephalic dogs had 3.5 times (95% CI: 2.4–5.0, $P < 0.001$) the odds of URT disorders compared with the non-brachycephalic terrier dogs.

In summary, this study reports that URT disorders are a relatively common presentation in dogs and that, relative to common terrier breeds, Bulldogs, French Bulldogs and Pugs are short-lived and predisposed to URT disorders.

Cardiac Troponin I as a prognostic biomarker in dogs with primary cardiac disease

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BACKGROUND

Cardiac troponins are the most sensitive and specific biochemical markers of myocardial injury. Although elevated troponin concentrations indicate cardiac cell necrosis, they do not define the cause of the injury. Cardiac troponin I (cTnI) has been shown to be elevated in dogs with congenital and acquired cardiac diseases but also in several systemic conditions, such as blunt chest trauma, gastric dilatation-volvulus, pyometra, anaemia, renal failure, babesiosis, ehrlichiosis, systemic inflammation and endurance exercise. This lack of specificity reduces the value of the assay as a diagnostic tool. Nevertheless, troponins have been shown to have some prognostic value in humans, dogs and cats with acute and chronic cardiac diseases.

HYPOTHESIS

Troponin can be used to predict the outcome of dogs with primary cardiac disease. Animals with higher cTnI concentrations experience shorter survival times.

METHODS

Case records from clinical cases at a small animal referral hospital in which serum Troponin I was measured over a three year period (2009–2012) were reviewed. Cases with cardiac disease were identified and those with anaemia, azotaemia, hypertension, treatment with anthracyclines or concurrent diseases were excluded. 94 dogs with primary cardiac disease were finally included in the study. Information on survival was obtained from the case records or by telephone contact with the owner or referring veterinary surgeon. Kaplan Meier curves and Mann-Whitney tests were used to assess differences in survival and serum cTnI concentrations between groups of dogs, respectively.

RESULTS

Eighty percent of the dogs with primary cardiac disease had cTnI concentrations above the reference range ($>0.15\text{ng/dl}$). This group of animals experienced significantly ($P=0.007$) shorter median survival times (861 days) than dogs with cTnI within the normal limit (1321 days). Furthermore, the median cTnI concentration was significantly ($P=0.002$) higher in non-survivors (0.515 ng/dl) than survivors (0.245 ng/dl). Higher cTnI concentrations were significantly ($P=0.012$) associated with the presence of congestive heart failure.

CONCLUSIONS AND CLINICAL RELEVANCE

Raised serum cTnI concentrations predict mortality in dogs with primary cardiac disease. These results support previous studies, highlighting the prognostic potential of cTnI in dogs with cardiac disease.

Clinical utility and user experience of a smart phone-associated, single lead ECG recording device (AliveCor®)

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A single lead ECG recording device (AliveCor®) that is available for use with smart mobile phones has recently become available. The ECG is recorded by 2 electrodes embedded in the phone cover with the signal being sent to either human or veterinary App-based software. The device records a single lead

ECG trace that is displayed on-screen speed (12.5, 25 and 50 mm/sec) and amplitude (5, 10, 20 mm/mV) can be varied and the trace inverted; filtering can be automatic, 50 or 60 Hz. Clinical information can be associated with each trace that can then be printed or sent by email as a PDF for storage and association with a patient's clinical notes.

The aim of the study was to try and obtain a diagnostic quality 30 second ECG in the consulting room from dogs of different breeds and coat lengths without shaving.

The study's objective was to ascertain whether the monitor could provide a convenient, cost effective, alternative for rapid assessment of canine ECGs.

49 dogs were included in the study. ECG's were obtained either by placing the device on the left chest wall over the heart or, for smaller dogs where the electrode contact was poor, by placing the front stopper pads on the two recording

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