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Ultrasound

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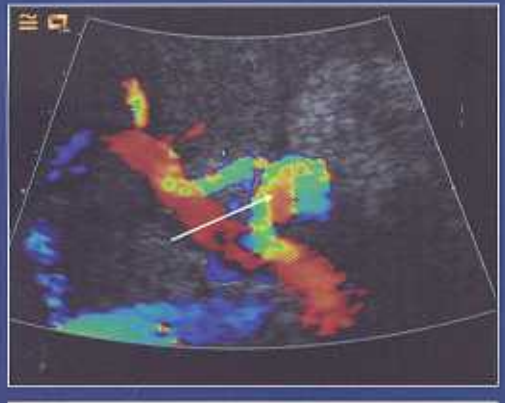
Contrast Agents
Computer Aided Diagnosis
Ultrasonographers and the Prostate
Facial Clefts
Image Quality
3D Intravascular Ultrasound
Postmenopausal Bleeding

Abstracts of the BMUS 36th Annual Scientific Meeting



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Results: Anterior urethral stricture location was equally well assessed with US and contrast urethrography. Stricture length of anterior strictures appeared longer on US by 21% (range 0–150%). However, the depth of spongiofibrosis could only be assessed with US. The average depth for penile strictures was 6.1 mm (3–9 mm), for bulbar strictures 6.6 mm (3.8–10.4 mm) and 8.6 mm (5–10 mm) for bulbomembranous distraction defects. The urethral diverticulum or stricture segmentation was equally well assessed with either contrast or US urethrography. However, the proximal extent for the distraction injury, stricture fistulation or false passages was better demonstrated on contrast urethrography.

Conclusion: Contrast urethrography was better for assessing the proximal distraction injury and fistulation. US urethrography was better for assessing the anterior urethral stricture length and the extent of spongiofibrosis. This may help to guide management options in anterior urethra strictures especially in the bulbar urethra.

Veterinary

The Echocardiographic Assessment of Congenital Heart Disease in Small Animals, Israël, NV, *Animal CardioPulmonary Consultancy, Belgium*

The veterinarian should be familiar with common cardiac malformations, its associated clinical signs, the repercussions for breeding and the possibilities of curative or palliative treatment. Accurate assessment will require Doppler echocardiography and referral to a veterinarian with specialist cardiology training.

Despite many American papers and textbooks stating that Patent Ductus Arteriosus (PDA) is the most common canine CHD, in Britain and Europe it appears that aortic stenosis is more prevalent. Pulmonic stenosis is the third most common CHD in dogs. In cats mitral and tricuspid dysplasia are the most common CHD, followed by ventricular septal defects. However, cats have often multiple congenital defects.

Aortic stenosis commonly affects breeds like Boxers, Golden Retrievers, Rottweilers, German shepherds and Newfoundland dogs (in USA). It can be valvular, supra-valvular and sub-valvular. The latter is the more common form. Its severity depends on the pressure gradient across the stenotic area (mild <40 mm Hg, moderate 40–80 mm Hg and severe >80 mm Hg). Secondary left ventricular hypertrophy with subendocardial hyperechogenicity is often a sign of severe AS. Many pure breeds and also mongrels have been represented in the different epidemiological **PDA** studies published. In a retrospective UK study (98 dogs) colour Doppler echocardiography revealed the presence of concurrent defects in 10% of the cases. In this study, analysis of the M-Mode echocardiographic findings showed that not all animals did not have the typical volume overload findings of increased left ventricular diameter in diastole and systole. Left ventricular wall thicknesses were most often within normal limits. There was a wide variation in FS. The left atrium appeared enlarged in 35% of the scans. Continuous wave Doppler velocities across the aortic valve were more than 1.5 m/s in 66% of the cases (range 1.0–3.7 m/s, mean 2.16 m/s), and was attributed to volume loading. Pulsed Wave or Continuous wave Doppler velocities across the pulmonary artery were more than 1.2 m/s in 17% of the cases (range 0.6–2.2 m/s). Concurrent mitral regurgitation was present in 40% of the animals. The ductus was visualised in most cases and the typical continuous wave pattern was visualised easiest from the right parasternal short-axis view at the level of the pulmonary artery bifurcation.

Pulmonic stenosis is common in certain breeds including the Beagle, Samoyed, Chihuahua, English bulldog, Miniature schnauzer, Labrador retriever, Mastiff, Chow-chow, Newfoundland, Bassethound, terrier and Spaniel breeds. It can be valvular, sub-valvular and supra-valvular. In Bull breeds it has been associated with aberrant coronary arteries. Valvular PS is the most common form in veterinary medicine. This form can be subdivided in a Type A (normal pulmonary artery diameter with parachute-like valve) and Type B (annular hypoplasia and a dysplastic valve). The severity depends on the pressure gradient across the valve (mild <50 mm Hg, moderate 50–100, severe >100 mm Hg). Post-stenotic dilatation is not related to the severity of the stenosis. On two-dimensional imaging the typical features of right ventricular and papillary muscle hypertrophy and a flattened septum indicating elevated right ventricular systolic pressure are often recognized. M-mode echocardiography shows the presence of paradoxical septal motion, another indicator of increased right ventricular diastolic pressure. There is often a decreased left ventricular internal diameter, secondary to decreased right ventricular cardiac output and consequently decreased left ventricular filling.

Mitral dysplasia is most commonly reported in cats and in large dogs like Great Danes, German Shepherds and Rottweilers. In the UK the Bull Terriers are commonly affected. It represents a complex of thickened valve leaflets, abnormally short or log chordae tendineae, abnormal papillary muscles and abnormally low implanted mitral valve. **Mitral stenosis** (MS) is a severe form of mitral dysplasia and is most commonly seen in Bull Terriers. It often associated with severe left atrial dilation. MS is associated with a pathognomonic CW mitral inflow pattern (prolonged Ect pressure half time with tall A-wave). **Tricuspid valve dysplasia** is not just one type of lesion. Lesions include thickened valve leaflets, abnormally short or log chordae tendineae, abnormal papillary muscles, abnormally low implanted tricuspid valves (Ebstein anomaly). There is a preponderance in male Labradors but CESD, Great Danes, GSD and Irish setters have also been reported. **Tricuspid stenosis** is uncommon and gives similar findings but then on the right side of the heart, as MS.

Most **ventricular septal defects** are high and peri-membraneous. Muscular ventricular septal defects are uncommon in small animals. Peri-membranous VSD's are not uncommon in cats and it has been reported in a family of English springer Spaniels. VSD are classified restrictive and non-restrictive depending on the pressure gradient across the two ventricles (> 4m/s restrictive). **Atrial septal defects** are most commonly seen as an incidental finding in Boxers, Samoyed and Dobermann. Depending on their embryological origin they are classified as ostium primum, ostium secundum, ostium sinus venosum, ostium coronary sinosum and patent foramen ovale defects.

Tetralogy of Fallot is a combination of a VSD, pulmonic stenosis, dextraocsition of the aorta and secondary right ventricular hypertrophy. It is the most common cyanotic congenital defect in the dog. Other very uncommon cyanotic heart diseases include **reverse (R-L) shunting VSD, ASD, PDA, truncus arteriosus and pulmonary atresia.** Their features will be shown in the lecture.

References available upon request

The Effect of Sedation on Diastolic Echocardiographic Variables in Healthy Cats, Luis Fuentes, V. Schober, KS, Bonagura, JD. *Department of Veterinary Medicine and Surgery, University of Missouri-Columbia, Columbia, MO, 65211, USA*

It can be difficult to obtain good-quality echocardiographic recordings in unsedated cats, yet the effects of sedation on Doppler echocardiographic variables have not been reported in cats. Seven healthy cats were scanned by one experienced echocardiographer under each of three different states: unsedated; after sedation with acepromazine (0.1 mg/kg SC) and butorphanol (0.25 mg/kg SC) (AB); and after sedation with the same doses of acepromazine and butorphanol plus the addition of ketamine (1.5mg/kg IV) (ABK). All measurements were made by one experienced observer.

Heart rate (HR) was initially higher ($p = 0.02$) in the cats sedated with ABK (232 ± 28 bpm versus 192 ± 21 bpm in the unsedated group and 204 ± 25 bpm in the AB group) but HR became similar in all 3 groups by the end of the study period (unsedated 199 ± 26 bpm, AB 206 ± 39 bpm, ABK 218 ± 37 bpm). Left ventricular end-diastolic area was decreased in the sedated cats (unsedated 2.09 ± 0.34 cm^2, AB 1.70 ± 0.18 cm^2, ABK 1.66 ± 0.29 cm^2, $p < 0.02$). Vagal manoeuvres were used to slow HR during recordings for mitral inflow. No significant effect of sedation was seen on transmitral flow variables or left ventricular flow propagation (Vp). No effect of sedation was seen on pulmonary venous flow velocities except for atrial reversal velocity (unsedated 15 ± 3 cm/s, AB 17 ± 5 cm/s, ABK 22 ± 4 cm/s, $p < 0.02$). No significant differences were found in Doppler tissue imaging, including systolic and diastolic mitral annular motion of the septum and lateral left ventricular wall, and isovolumic relaxation time.

These results suggest that sedation with the protocols used in this study may be acceptable for facilitating echocardiographic measurements in healthy cats. Further studies would be needed to confirm these results in cats with cardiac disease.

Decreased Diastolic and Systolic Myocardial Velocity Gradients in Cats With Hypertrophic Cardiomyopathy, Koffas H[1], Dukes-McEwan J[1], Moran C[2], Corcoran BM[1], French A[1], Sboros V[2], Simpson K[1], McDicken WN[2]. *[1]Dept. Vet. Clinical Studies & [2]Dept. Med. Physics, University of Edinburgh, UK.*

Objective: To determine the range of peak mean myocardial velocities (MMV) and myocardial velocity gradients (MVG) in the left ventricular posterior wall (LVPW) of normal cats and cats with hypertrophic cardiomyopathy (HCM) by using colour M-mode Tissue Doppler Imaging (TDI).