

POSTER PRESENTATIONS

COMPUTED TOMOGRAPHY AND VIDEO-OTOSCOPIC FEATURES OF A CONCURRENT TRAUMATIC TYMPANIC MEMBRANE RUPTURE AND PATULOUS AUDITORY TUBE LEADING TO EAR BREATHING IN A DOG

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An 8-year-old entire male Beauceron was presented for acute onset of breathing noise through the left ear after falling on the left side of his head. On clinical examination, breathing noises and airflow through the left external ear canal during exhalation were objectized. The clinical signs were increased during excitation. Cranial nerves neurological examination was normal. A video-otoscopic examination showed left tympanic membrane rupture with dynamic opening of the auditory tube ostium in the left tympanic bullae during each exhalation. A computed tomography (CT) of the head was performed to determine the extent of the lesion. CT showed abnormal mild diffuse dilation of the left auditory tube (1.5-2.9mm in diameter) leading to a communication between the caudal nasopharynx and the left tympanic bulla lumen. The calvarial osseous structures were within normal limits. In the context of a concurrent ruptured left ear drum, exhaled air can follow an alternative exit pathway through the left auditory tube, the left tympanic bulla, and the left external ear canal, explaining the presenting clinical signs. The clinical signs were self-limiting and resolved spontaneously after 7 days. The cause of the dilation was suspected to be secondary to a pressure difference between the nasopharynx and the external ear canal during exhalation without excluding a focal transient traumatic neuritis of the left auditory tube motor innervation.

FEASIBILITY OF THE RADIOGRAPHIC ASSESSMENT OF THE TEMPOROMANDIBULAR JOINT (TMJ) USING THE PARALLAX EFFECT – A PRELIMINARY STUDY

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Radiographic evaluation of the TMJ can be accomplished through the use of specific oblique projections that avoid superimposition of structures, making cross-sectional imaging techniques preferable, though they may not be really available in general practice (GP). The use of the parallax effect in a standard mediolateral view has been described as allowing for a basic assessment of the *caput mandibulae* (CM), *fossa mandibularis* (FM), and *processus retroarticularis* (PR) of the TMJ. Although the anecdotal use of this technique has been described, to our knowledge a study of its feasibility has not been attempted. To address this, lateral parallax effect radiographs of 60 feline TMJs were evaluated by an expert observer and the shape, position, and anatomical relationship of the CM (75%, 86.7%, 83.3%), FM (75%, 86.7%, 81.7%) and the PR (63.3%, 65%, in 63,3%) were successfully observed, respectively, in the right TMJ and CM (90%, 95%, 93.3%), FM (90%, 95%, 95%) and the PR (85%, 85%, 85%) in the left TMJ. This suggested that the parallax effect had potential in GP to assess the feline TMJ. To evaluate this, intra-observer reliability was determined between a GP and the expert, using the same radiographs. The assessment of the different structures by both observers showed only a fair intra-observer reliability (k {0.018 – 0.355}). This suggests that, although the TMJ can be assessed by making use of the parallax effect by an experienced observer, caution must be exercised when used in GP and should not replace the use of CT, or expert reporting.

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CASE OF SUCCESSFUL TREATMENT OF MENINGOENCEPHALITIS OF UNKNOWN AETIOLOGY (MUE) IN A FRENCH BULLDOG DOCUMENTED WITH 3T MAGNETIC RESONANCE (MRI)

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This study aims to provide comparative follow-up imaging in a case of successful treatment of meningoencephalitis of unknown aetiology (MUE) in a dog. A 3 year old intact female French bulldog with suspected MUE was presented for magnetic resonance imaging (MRI) with a three weeks history of behavioural changes and compulsive walking. MRI was performed with Discovery MR750w 3.0T scanner (GE Healthcare, USA) using the following sequences: T1; T2; T2 fluid-attenuated inversion recovery (FLAIR); diffusion-weighted imaging (DWI); and post-contrasting T1-weighted. MRI performed before treatment revealed numerous multifocal lesions up to 7 mm diameter which shared common features – hyperintensity in T2-weighted and T2 fluid-attenuated inversion recovery (FLAIR), hypointensity in T1-weighted, zone of adjacent brain tissue oedema and marked contrast enhancement after intravenous contrast administration. Sites of abnormalities localization included corpus callosum, thalamus, pons, cerebellum, medulla oblongata and subcortical white matter of frontal lobe, parietal lobe, and occipital lobe. Marked meningeal contrast enhancement was noted. MRI findings confirmed diagnosis of MUE. Treatment was based on prednisone and cytarabine combined protocol. Clinical signs associated with brain inflammation resolved. Second MRI repeated after 7 months of treatment revealed apparent change in lesions characteristics including poor demarcation and hypointensity in T2 sequences. Zone of oedema surrounding lesions resolved and there was no contrast enhancement noted. The study aimed to compare MRI findings in a dog with MUE before and after successful treatment. Control MRI is considered to depict favourable reaction to treatment and might reflect chronic state of disease.

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MAGNETIC RESONANCE IMAGING DYNAMIC SUBTRACTION VS. PRE- AND POST CONTRAST 3D GRADIENT ECHO IMAGING FOR EVALUATION OF THE CANINE AND FELINE BRAIN

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Magnetic resonance subtraction imaging utilising pre- and post-contrast (C-/C+) spin echo (SE) images has been reported to increase accuracy in the diagnosis of meningeal and inflammatory brain diseases. 3D T1-weighted (T1-W) gradient echo (GE) techniques have been proposed as a suitable alternative to SE sequences. The aim of this study was to compare subtraction images with C-/C+ 3D GE images in 100 canine and feline MRI studies. T1-W 3D GE images were acquired pre- and post-contrast administration in 100 consecutive small animal patients and subtraction images were generated. Combined C-/C+ GE images and individual transverse subtraction images were randomized and independently evaluated by 2 blinded observers. Diagnosis categories were “normal”, “inflammatory”, “neoplastic”, and “other”. Clinical diagnosis was made in the same categories and served as the gold standard. Image interpretation results were compared to the clinical diagnosis. Interobserver agreement was determined. 41 cases were categorized as “normal”, 18 as “inflammatory”, 28 as “neoplastic”, and 13 as “other”. The agreement of the C-/C+ GE images with the gold standard was significantly higher than that of the subtraction images ($k = 0.7491$ vs. $k = 0.5924$; $p=0.0075$). Misinterpretation of normal studies as “inflammatory” was the largest error source for subtraction images. Based on this study, subtraction images do not provide an advantage to paired C-/C+ 3D GE images when evaluating the canine and feline brain and may lead to erroneous diagnoses of inflammatory encephalopathies.

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X-RAY-GUIDED ASPIRATIVE CYTOLOGY IN THE DIAGNOSIS OF FUNGAL OSTEOMYELITIS IN FELINE: A CASE REPORT

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Osteomyelitis is an inflammatory condition of the bone and its components, and can be caused by bacteria and fungi. These can be inoculated directly into the bone tissue or via the hematogenous route. The objective of this report is to present a case of osteomyelitis diagnosed through aspiration cytology guided by radiographic examination. Feline, female, 1 year old, short hair, presenting an area close to the ovariohysterectomy scar, that is firm, delimited and not painful. Ultrasonography showed an increase in volume due to fluid content, with no communication with the abdominal cavity with a differential for an abscess. During treatment via antibiotic therapy, the patient presented claudication in the right thoracic limb, with painful sensitivity to palpation and persistent increase in volume in the surgical scar. A radiograph of the limb showed a predominantly lytic bone lesion, located in the metaphysis and distal diaphysis of the radius, and an increase in the volume of soft tissues adjacent to the lesion. X-ray guided aspiration cytology was performed, the result of which was fungal suppurative osteomyelitis, differentials for histoplasmosis and sporotrichosis. The antifungal treatment evolved with the disappearance of the abdominal lesion and after radiographic reassessment, a favourable local evolution of bone lysis was observed. The main suspect for bone infection was hematogenous fungal translocation from the abdominal lesion, since there was remission of this after antifungal treatment. Guided aspiration cytology with the aid of imaging demonstrated in this report to be an excellent method for the definitive diagnosis of osteomyelitis.

COMPUTED TOMOGRAPHIC FEATURES OF ORAL SQUAMOUS CELL CARCINOMA IN 8 DOGS

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Squamous cell carcinoma (SCC) is the second most common oral tumour in dogs. Computed tomographic (CT) descriptions of oral SCC (OSCC) in dogs are sparse. Therefore, the aim was to describe CT features of OSCC to add to the current knowledge of this tumour. Medical records of dogs were reviewed for the presence of a head CT and histopathological diagnosis of OSCC. CT characteristics of the mass and osseous abnormalities were recorded. 8 dogs were included in the study. Ages ranged from 6 months to 14 years. Oral masses were detected on the right side (3/8), left side (2/8) or bilaterally (3/8). Bones affected by osteolysis were: incisive bone (2/8), maxilla (2/8), maxilla and additional bones (3/8), mandibula (1/8). Those cases with polyostotic distribution showed additional extension into the nasal cavity unilaterally (1/3) and bilaterally (1/3), as well as involvement of the nasal cavity, nasopharynx, orbit and cranial cavity in one case. Rostral masses were seen in 4/8 dogs, with mild osteolysis together with a predominant soft tissue mass in 3/4 dogs. Two dogs with rostral masses were 6 months old. There was one mandibular mass lesion that showed involvement of the mandibular canal. OSCC shows a range of CT features in dogs and may be considered as differential diagnosis with the following characteristics: (1) mono- or polyostotic aggressive oral mass lesion involving adjacent compartments (nasal cavity, nasopharynx, orbit, cranial cavity, mandibular canal), (2) rostral oral mass lesion with a predominant soft tissue mass.

COMPUTED TOMOGRAPHY OF OVARIAN NEOPLASIA IN DOGS: A PROPOSED SYSTEMATIC APPROACH TO IMAGING REPORT

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Ovarian neoplasia is uncommon in dogs, with an overall prevalence up to 1.4% of all canine tumours, increasing to 6.25% in intact bitches. Considered the reported favourable prognosis, surgical treatment is recommended even in advanced cases.

This multicentric case series aims to describe the Computed Tomography (CT) features and metastatic pathways of ovarian neoplasia in dogs through a systematic approach. The CT images of 9 intact bitches from 5 referral centres were retrospectively reviewed and reported by a board-certified radiologist following the consensus-based lexicon developed for CT evaluation of ovarian cancer in human patients. Results included 7 unilateral (4 left, 3 right) and 2 bilateral neoplasia, with prevalent mid-abdominal localisation (7/9), mass effect on the surrounding intestinal loops (8/9) and heterogenous pre- and post-contrast appearance. Peritoneal stranding (9/9) and effusion (7/9) were frequent findings. The most common adnexal lesion was the presence of a tortuous ovarian artery (8/9), which could be helpful to identify the ovarian origin of complex masses. Sternal lymph nodes were the most altered nodes (6/9). Metastatic lesions were found in 5 cases (55%), with concurrent signs of tumor rupture and peritoneal effusion in 4 dogs. However, distant metastases were mainly secondary to hematogenous spread (3) compared to local implant (1), differently from human literature. The human lexicon for ovarian cancer CT evaluation could be effectively applied in veterinary medicine to standardise imaging reports, providing also valuable data to guide patient treatment and defying prognosis.

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RADIOGRAPHIC FINDINGS OF DISCOSPONDYLITIS AND SPLENITIS SECONDARY TO A PERFORATING PROVENTRICULAR FOREIGN BODY IN A GERONTICUS EREMITA

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This report describes the radiographic findings with post-mortem confirmation of discospondylitis and splenitis secondary to a proventricular perforation caused by a migrating foreign body in a 3-year old Geronticus eremita presenting for a chronic history of progressive paraparesis, intermittent hyporexia and lethargy. A whole body computed radiographic study was performed in ventrodorsal and lateral views using a portable radiographic system with the following parameters: 55Kvp and 3mAs. Due to clinical worsening and unresponsiveness to medical treatment, the patient was euthanized with subsequent post-mortem/histopathology examination. The radiographic work-up showed a linear 2 cm long metallic opacity surrounded by an elongated mixed soft tissue opaque/emphysematous lesion at the region of the proventriculus. The latter lesion created border effacement with the adjacent paravertebral hypaxial musculature at the mid-celomic thoracic vertebrae. Moreover, a focal widening of the intervertebral disc space with irregular lysis of the endplates was observed at the same level. Borderline splenomegaly was also observed. Post-mortem macroscopical examination revealed a plastic-coated electric wire which perforated the gastric wall at the ventricular-proventricular junction with a focal adhesion to the hypaxial musculature. Histopathology revealed a severe diffuse lymphoplasmacytic pro-ventriculitis with a focal ulceration of the ventricular mucosa, splenic bacterial coagulative necrosis, adjacent hypaxial myositis and discospondylitis. This case describes unusual pro-ventriculitis, splenitis and discospondylitis secondary to chronic migration of a perforating proventricular foreign body.

IMAGING FINDINGS OF EROSIVE POLYARTHRITIS AND ‘ONION-LIKE’ GRANULOMA IN A TESTUDO MARGINATA

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This report describes the radiographic, computed tomographic and ultrasonographic findings of an erosive polyarthritis and related granuloma formation in a 42-year-old *Testudo marginata* presenting for a subacute history of swelling of the right limbs and right-sided hemiparesis. Whole body radiographic exam was performed with orthogonal DV and right-lateral views. Whole body CT exam with soft tissue and bone kernels was further performed in addition with focused US examination of the lesions using a high-frequency linear probe. On direct radiography polyostotic aggressive lysis of the right shoulder and stifle joints was detected with associated peripheral swelling. CT examination revealed severe subchondral lysis affecting the right humerus, clavicle and coracoid bone, with marked joint swelling. Similar changes were detected at the ipsilateral stifle along with a rounded mixed soft tissue/mineral attenuating lesion located at the caudolateral periarticular muscular and subcutaneous tissues. On US exam, the latter showed a multi-layered hypo/hyperechoic ‘onion-like’ appearance with an anechoic partially casting core. Multifocal swelling of the other joints was also observed with no evidence of bone lysis. Fine needle aspiration and arthrocentesis of the right shoulder and stifle were performed with a final diagnosis of macrophagic chronic degenerative arthropathy and associated granuloma formation. This case report describes the imaging findings of an erosive polyarthritis with a distinctive ‘onion-like’ ultrasonographic pattern indicative of a granuloma.

COMPUTED TOMOGRAPHIC CHARACTERISTICS OF UTERINE MASS IN MACAQUES

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Reproductive tract tumours account for approximately 15% of all tumours in nonhuman female primates. However, the clinical values of computed tomography (CT) for these tumours are less discussed in macaques. Therefore, this study aimed to describe the CT characteristics of the uterine mass in macaques. This retrospective study reviewed the CT images of female macaques with a uterine mass from the National Pingtung University of Science and Technology Veterinary Medical Teaching Hospital from 2016 to 2021. Images were qualitatively and quantitatively analysed, and their correlation between pathological results and clinical signs were evaluated. A total of thirteen cases were included, nine cases of leiomyoma and four cases of leiomyosarcoma. Nonspecific clinical signs including lethargy, anorexia and vomiting were documented. No significant difference in size between leiomyoma and leiomyosarcoma was noted; however, a larger mass contributed to obstruction of the urinary tract, and extrinsic ureteral obstruction or pyelectasis caused by the mass was associated with clinical signs. Additionally, in triple-phase CT studies, contrast-enhancement of uterine leiomyoma was significantly higher than leiomyosarcoma in arterial phase images. Triple-phase CT images could be used to distinguish macaque uterine leiomyoma and leiomyosarcoma. Furthermore, mass-associated extrinsic ureteral obstruction or pyelectasis leads to significant clinical implications.

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SERUM CANINE CPSE AND STRAIN AND 2D SHEAR WAVE SONOELASTOGRAPHY FOR EVALUATION OF PROSTATE DISEASE: PRELIMINARY RESULTS.

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CPSE is useful to identify canine prostate disorders; increasing interest has been placed in US-sonoelastography to evaluate prostatic disease, being this technique able to assess tissue stiffness variable with disease. We aimed to investigate a correlation between sonoelastography (SE and 2D-SWE) and CPSE, to look for the possible link role of these techniques to non-invasively assess prostate disorders. Thirty dogs were included. CPSE threshold 52,3 ng/ml was used to distinguish healthy and diseased dogs. Hence US, SE and 2D SWE were performed. SE consisted in a visual evaluation of prostate stiffness, followed by the semiquantitative comparison with abdominal wall; 2D SWE data were expressed in m/s and kPa. Statistical analysis was performed on the collected data, considering a p value < 0.05 to assess significant difference between healthy and diseased dogs; a ROC curve was calculated to assess a possible correlation between CPSE and sonoelastography. 22 healthy (mean age 3.09 range 2-7) and 8 diseased dogs (mean 6.6 years range 4-8.5) were diagnosed on the basis of CPSE values (healthy mean 30.64 range 10.94-49.74, diseased mean 65.18 range 53.48-74.12). The diseased dogs had sonographically heterogeneous prostate parenchyma and statistically significant higher stiffness values in kPa. Based on ROC curve results, 41.66 kPa was considered the cut off-value between healthy and diseased dogs. No difference in stiffness were detected with SE. Based on these preliminary results, CPSE and 2D SWE might be linked and potentially useful to non-invasively investigate canine prostate disorders.

RENOMEGALY DUE TO URETERAL OBSTRUCTION IN A FELINE AND ITS IMAGING ASPECTS: CASE REPORT

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Ureteral obstruction in cats is an emergency in many cases, as the patient is usually asymptomatic and the signs usually appear when the obstruction is complete. The picture can evolve quickly to a severe clinical case, especially when there is renal dysfunction. The aim of this report is to present the main imaging findings in a feline with renomegaly due to ureteral obstruction. Feline, 7 years old, female, short hair, was admitted to the veterinary hospital with abdominal sensitivity, anorexia, constipation, anuria and vomiting. Biochemical tests detected an exacerbated increase in electrolytes, urea and creatinine. Abdominal ultrasound examination showed bilateral renomegaly, hydronephrosis and dilation of the ureters, due to an obstructive process caused by microcalculi, in addition to gastropathy and mucometra. Abdominal radiography confirmed the renomegaly, with the presence of radiopaque structures throughout the ureteral path. Surgical decompression with the Subcutaneous Ureteral Bypass (SUB) device was suggested to the patient, as its success rate is high, with fewer complications and offering quality of life to patients. However, due to the critical state of the patient with the late diagnosis, the procedure could not be performed and euthanasia was the viable option. Feline ureteral obstruction is an urgent and potentially fatal case. New decompression techniques provide patients with a normal life after treatment. Imaging exams are essential for the investigation of obstruction and therefore, early diagnosis and directing for immediate therapeutic conduct generates a higher percentage in the resolution of this pathology.

SPLENIC HETEROGENOUS ENHANCEMENT PATTERNS ON CT IN CLINICALLY HEALTHY CATS: COMPARING WITH DIFFUSE INFILTRATIVE SPLENIC LESIONS

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This study describes the computed tomographic appearances and duration of heterogeneous splenic enhancement in healthy cats and compare those enhancement patterns with diffuse infiltrative splenic lesions (DISL). Spleens of 14 healthy cats were imaged using identical contrast-enhanced computed tomography (CT) protocols which were obtained at 10 seconds, 25 seconds, 45 seconds, and every 20 seconds until 245 seconds from the initiation of contrast material injection. The CT images were evaluated for the presence of transient splenic heterogeneity. Furthermore, the relationships of certain variables including age, weight, systolic blood pressure, and splenic volume to the duration of splenic enhancement were determined. Also, medical records and CT images of 5 cats with DISL were retrospectively evaluated. Transient heterogeneous enhancement of the spleen was observed in all healthy cats, and the maximum heterogeneity was observed 25 seconds after the injection which indicates the portal venous phase. Splenic heterogeneity lasted more than 5 minutes in nine cats (64.3%). No statistically significant relationships were seen between the duration and degree of splenic heterogeneity in the portal venous phase and variables including weight, age, systolic blood pressure, and splenic volume. Compared to the healthy group, the obliteration of inhomogeneous splenic enhancement along with subjective splenomegaly was observed in the DISL group. Transient splenic heterogeneity is common in cats undergoing contrast-enhanced CT and may last much longer than is generally expected. In addition, results suggest that obliteration of normal heterogeneous splenic enhancement along with splenomegaly on CT images could be useful as a diagnostic indicator of DISL.

COMPUTED TOMOGRAPHIC CLASSIFICATION OF CANINE HEPATIC ARTERY ANATOMY AND DEVELOPMENT OF THREE-DIMENSIONAL CANINE NORMAL ARTERY MODEL AND HEPATIC TUMOR MODEL FOR STIMULATION OF TRANSARTERIAL EMBOLIZATION

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Transarterial embolization (TAE) and transarterial chemoembolization (TACE) are interventional procedures for reducing the size of liver tumours based on the characteristics of liver tumors that 90% of blood supplied through the hepatic artery. The purpose of this study is to understand the vascular structure of the normal hepatic artery and blood flow into the hepatic mass in dogs, to develop 3D-printed canine artery models with and without hepatic tumours, and finally to simulate TAE of hepatic tumour through the models. CT images of a total of 84 dogs with normal hepatic arteries were analysed, and the mean value and standard deviation of body weight, celiac artery size, and hepatic artery size were 6.47 ± 4.44 kg, 3.28 ± 0.77 mm, and 2.14 ± 0.43 mm, respectively. It was established that type 2-2-1 is the most prevalent of the hepatic artery branch types, as it was in the previous study. The review of 65 CT images of dogs with hepatic tumours showed that the majority of lesions were larger than 7cm. Based on this, a 3D model of the normal canine hepatic artery and the hepatic tumour was made using one representative case from each group. Both models were used for the simulation of TAE, and the successful embolization was verified in each model. Despite some limitations, using these 3D models for the practice of TAE will allow practitioners to become more skilled, which could shorten anaesthesia time and provide a solution to the ethical dilemma of doing practical procedures on live animals.

18F-FLUORODEOXYGLUCOSE POSITRON EMISSION TOMOGRAPHY/MAGNETIC RESONANCE IMAGING IN CANINE BRAIN TUMOR PATIENTS: A PILOT STUDY

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^{18}F -Fluorodeoxyglucose (FDG) positron emission tomography (PET) is a valuable tool for the diagnosis, differentiation, grading, and prognostication of human brain tumours but remains novel in veterinary medicine. This study describes FDG PET/magnetic resonance imaging (MRI) characteristics of six dogs with primary brain tumours. Tumour, cortical grey matter, and cerebral white matter maximum standardized uptake values (SUV_{max}) were measured, and tumour-to-white matter (T:W) and tumour-to-grey matter (T:G) ratios were calculated. One dog had two lesions (presumed meningioma and pituitary macroadenoma), and the remaining lesions included two meningiomas, one pituitary macroadenoma, and two intra-axial lesions - glioma versus cerebrovascular accident (CVA). Meningiomas had higher FDG avidity (mean SUV_{max} 6.0), T:W ratio (mean 1.5), and T:G ratio (mean 1.1) than pituitary macroadenomas (mean SUV_{max} 5.0, T:W ratio 1.2, and T:G ratio 0.9). Intra-axial lesions had the lowest FDG avidity (mean SUV_{max} 4.3), T:W ratio (mean 1.1), and T:G ratio (mean 0.7). Lower FDG avidity and reduced lesion size compared to initial screening MRI was suggestive of CVA over glioma. This study describes the feasibility and application of FDG PET/MRI in canine brain tumour patients. The majority of presumed intracranial neoplasms were hypermetabolic relative to normal white matter, and meningiomas were the most FDG avid. FDG PET/MRI of intra-axial masses may be a useful tool in the differentiation of neoplasms from CVA. Clinical incorporation of FDG PET/MRI may improve the diagnostic accuracy, development of targeted therapeutics, and prognostication in canine brain tumour patients.

URETERAL DIVERTICULA AS INCIDENTAL FINDINGS IN A 14-YEAR-OLD DACHSCHUND

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Ureteral diverticula are a rare ureteral abnormality, that may be congenital or acquired. They are rarely described in human patients and anecdotally reported in dogs and cats. A 14-year-old, male neutered dachshund underwent computed tomography of the spine because of suspicion of medullary compression localised in the T3-L3 spinal cord segment. Pre-anaesthetic biochemistry, blood gas analysis and haematology were within normal limits. No urinary sign has been reported by the owners. CT scan showed a compressive L1-L2 discal hernia. Both ureters were tortuous with multiple focal dilations filled with contrast medium. A lateral radiography of the spine was performed. Ureters appeared tortuous in their caudal part, with multifocal outpouchings. The proximal two-thirds of the ureters showed heterogeneous filling, and the contrast medium seemed to accumulate only in outpouchings. On ultrasonography, the ureters were visible at their departure, the wall was mildly thickened, and the ureters were tortuous. No outpouching was observed. Right L2-L3 hemilaminectomy was performed. The dog went home 48h post-surgery. Ureteral diverticula are characterized by multifocal, small outpouchings of the ureters. They are due to protrusion of the mucosa through the muscularis because of urothelial hyperplasia. In human patients, diagnosis is often made based on intravenous urography, antegrade urography, or retrograde pyelography. Patients are usually asymptomatic. It is important to recognise ureteral diverticula because they are suspected to be a potential risk factor for urothelial carcinoma.

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AORTIC ANEURYSM IN A DOG WITH SYSTEMIC *ASPERGILLUS TERREUS* INFECTION

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A 2-year-old female neutered Schnauzer was referred to the University of Adelaide Veterinary Health Centre for investigation of fluctuating pyrexia of unknown origin, inappetence and lethargy of four weeks duration. Clinical exam revealed a marginally enlarged left prescapular lymph node, painful abdomen and a temperature of 39.1° C. Computed tomography revealed a large abdominal aortic aneurysm. The aneurysm was surrounded by a thick rim of minimally enhancing soft tissue. The right renal artery was small suggesting luminal stenosis and resulting in reduced renal perfusion. Renal cortical infarctions were present bilaterally. Multiple large thrombi were present in the caudal vena cava. There was severe retroperitoneal and mild abdominal and thoracic effusion. Subcutaneous oedema was located in the perineal area and caudoventral abdominal wall. Additional pertinent findings included splenomegaly, abdominal, thoracic and peripheral lymphadenomegaly, pulmonary thromboembolism and diffuse mild bronchial wall thickening. Post mortem examination confirmed the presence of a large aortic aneurysm with severe transmural fibrinohaemorrhagic and necrosuppurative arteritis with intralesional fungal hyphae (*Aspergillus terreus* isolated). Furthermore, there was multifocal corticomedullary (embolic) pyogranulomatous nephritis, with marked perirenal oedema, haemorrhage, fibrinosuppurative cellulitis, renal arterial thrombosis and retroperitoneal oedema, fibrinous peritonitis with omental adhesions as well as diffuse pulmonary congestion and oedema with multifocal arterial fibrin thrombi. *Aspergillus species* are the most common cause of systemic fungal infections in dogs with the majority of cases reported in German Shepherds. Infective aortic aneurysms are rare and this is the first report of a dog with aortic aneurysm due to *Aspergillus species*.

ULTRASONOGRAPHIC AND COMPUTED-TOMOGRAPHIC FEATURES OF THE PARATHYROID GLANDS IN CANINE PRIMARY HYPERPARATHYROIDISM

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Canine primary hyperparathyroidism (PHPT) develops when one or more of the parathyroid glands (PTGs) begins to function autonomously due to parathyroid neoplasia or hyperplasia. The resultant increase in parathyroid hormone (PTH) causes an ionised hypercalcaemia and associated clinical signs. After definitive diagnosis using a PTH assay, cervical ultrasonography is typically used in planning surgical parathyroidectomy of abnormal glands. There is limited information in the veterinary literature detailing computed tomography (CT) features of the PTGs in canine PHPT. The purpose of this descriptive study was to assess and compare ultrasonography and CT findings of PTGs in four cases of canine PHPT. All four cases had a PTH assay confirming a diagnosis of PHPT and histopathology describing parathyroid neoplasia or hyperplasia. The following parameters were recorded for ultrasonography and CT: size, shape, lateralisation, location, tissue or vascular invasion and echogenicity or attenuation compared to thyroid tissue. Contrast enhancement and attenuation pre and post-contrast were also recorded for CT. PTGs identified as enlarged on ultrasonography were also identified as enlarged on CT. The enlarged PTGs identified on imaging were confirmed with histopathological findings. CT was limited in spatial resolution with ultrasound showing more accurate measurements and improved localisation. All identified PTGs were hypoechoic and hypoattenuating compared to thyroid tissue on ultrasonography and CT respectively. These findings indicate that CT of PTGs is feasible and may facilitate diagnosis of canine PHPT especially in the absence of confident ultrasonographers. Further investigations are required to determine its potential value for surgical planning.

ULTRASOUND GUIDED HOOK-WIRE LOCALIZATION FOR SURGICAL RETRIEVAL OF GRASS AWNS IN TWO DOGS

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Hook-wires have been successfully used in lymph node excision in small animals and in localising non-palpable breast lesions in humans. Grass awn foreign bodies in small animals present significant surgical challenges with a high surgical failure rate. The aim of the study was to evaluate whether the use of an ultrasound-guided hook-wire localization method for grass awn foreign bodies in dogs would improve the surgical success rate (complete excision). A Kopans Breast Lesion Localization Needle (IZI Medical) with a spring-hook wire was utilised in two cases of grass awn foreign bodies. Case 1 had a grass awn in the intercostal muscle caudal to the right 12th rib and case 2 had a grass awn located within an abscess deep to the left mandibular salivary gland at the angle of the mandible. Under ultrasound guidance the spring-hook wire was advanced in an attempt to anchor it to the grass awn. Results Case 1 - the grass awn was successfully found and excised. The hook wire had advanced beyond the grass seed into the abdominal cavity. It was successfully removed and no complications were noted. Case 2 - the grass awn was quickly identified and excised. The hook wire had successfully hooked on to the grass awn. No complications were noted. Use of the Kopans Breast Lesion Localization Needle to accurately indicate the location of a grass awn foreign body was an easily performed procedure and resulted in successful excision in both cases, with reduced surgical time and complications.

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AUTOMATIC KIDNEY DETECTION USING DEEP LEARNING MODELS FROM PRE-CONTRAST CT IMAGES IN DOGS

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Computed tomography (CT) is a useful imaging modality for the assessment of kidneys. Many studies in human medicine have proposed deep-learning models using various algorithms for automatic kidney detection in CT images to help clinicians in their diagnosis of diseases and evaluation of kidneys. In veterinary medicine, a recent study proposed a deep-learning model based on UNet Transformer for the detection and volume estimation of kidneys in dogs from CT images. This study aimed to develop deep-learning models with improved performance using different algorithms. A total of 165 pre-contrast CT scans of dogs were used for training and validation. All kidneys in the images were manually segmented. AttUNet was used for the first stage to obtain coarse feature maps of kidneys and then five different models, namely, SwinUNet, AttUNet, RBCANet, UTNet, and TransUNet, were used for the detailed detection of kidneys in the second stage. For the implementation details, combined loss function and data augmentation were used to elevate the performance of the models. Our developed models showed great accuracy of 0.960, 0.956, 0.960, 0.954 and 0.951, respectively. The mean Dice Similarity Coefficients, which shows the similarity between manual and automated segmentation of these models, were 0.928, 0.922, 0.922, 0.920 and 0.915, respectively. In conclusion, this study proposed deep-learning models that showed improved performance compared to the previous model for kidney detection from pre-contrast CT images of dogs. Further studies with new algorithms can be helpful in developing deep-learning models of superior performance.

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PERFORMANCE OF A COMMERCIALY AVAILABLE ARTIFICIAL INTELLIGENCE SOFTWARE FOR THE DETECTION OF CONFIRMED PULMONARY NODULES AND MASSES IN CANINE THORACIC RADIOGRAPHY

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Advancements in the field of artificial intelligence (AI) are modest in veterinary medicine relative to their substantial growth in human medicine. However, interest in this field is increasing, and commercially available veterinary AI products are already on the market. In this retrospective, diagnostic case-controlled study, the accuracy of a commercially available AI product (Vetology AI®) is assessed on 56 cases of pulmonary nodules on thoracic radiography confirmed either by CT, cytology, or histopathology, as well as 32 control cases. The AI software detected pulmonary nodules in 31 of 56 confirmed cases and correctly classified 30 of 32 control cases. The AI model accuracy is 69.3%, balanced accuracy 74.6%, F1-score 0.7, sensitivity 55.4%, and specificity 93.75%. Building on these results, both the current clinical relevance of AI and how veterinarians can be expected to use available commercial products are discussed.

THE USEFULNESS OF KIDNEY-TO-AORTA RATIO IN DOGS WITH RENAL DISEASE

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The kidney length (KL) to the aortic luminal diameter (AoD) ratio (KL/AoD) has been proposed to assess renal dimensions. The main limitation of the method is the wide range of normal cut-off values, which resulted in poor sensitivity and specificity and moreover has not been validated in dogs with renal disease. This study aims to: a) verify if the originally proposed cut-off values were confirmed in a different dog population; b) compare KL/AoD ratio between healthy dogs and those with renal disease; c) define the sensitivity and specificity of the method. According to serum renal parameters of the 116 dogs included in the final sample, 95 were rated as healthy and 21 as diseased. The healthy group had no differences between left and right KL. No differences were also found between the KL of healthy and diseased dogs, while, using KL/AoD ratio, diseased dogs showed a significantly smaller ratio ($P = 0.0002$), although a partial overlap between healthy and diseased dogs was still present. Furthermore, in the healthy dogs, KL was positively correlated with bodyweight; this correlation disappears using the KL/AoD ratio. The cut-off values for healthy dogs, calculated with the 95% confidence interval, were significantly narrower than previously reported (7.2 – 7.5 versus 5.5 – 9.1). Finally, for KL/AoD ratio < 6.5 , the ROC curves showed the higher specificity (81%), but still a low sensitivity (50%). Results of this study provided narrower cut-off values increasing the clinical usefulness of the KL/AoD method.

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ULTRASONOGRAPHIC ASSESSMENT OF THE RENAL SIZE USING A KIDNEY LENGTH-TO-AORTIC DIAMETER RATIO IN HEALTHY CATS

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Ultrasonographic (US) assessment of the renal size can provide useful clinical information, in combination with other US parameters. The aims of this study were to establish an US kidney (K)-to-aorta (Ao) ratio to estimate the renal size in healthy cats, and to assess the impact of age, body weight, sex and gonadal status in the ratio. Fifty-six cats (19 intact males, 11 neutered males, 16 intact females, and 10 neutered females) were included. Cats were enrolled when non-renal disease and normal blood pressure was demonstrated, and showed negative FeLV and FIV tests. Cats were divided into three age groups (<7 m, 8m - <7y and >7 years) and two groups of body weight (<4 kg and \geq 4 kg), sex (male/female) and gonadal status (intact/neutered). In each cat the length of both kidneys and the aortic luminal diameter were measured on US images and the ratio was calculated. No statistical difference was found between the length of both K. Therefore, only one ratio was calculated including the values of both kidneys (K/Ao: 11.83 ± 3.16). There was no interaction between age, body weight, sex, gonadal status and Ao diameter. The K/Ao ratio was only influenced ($p < 0.05$) by the gonadal status, showing neutered cats a higher ratio (12.89 ± 3.85) than intact cats (11.19 ± 2.52). The results of the study indicate that only gonadal status influences the US measurement of the K/Ao ratio. Accordingly, this factor should be considered when evaluating renal size in cats without renal disease.

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DEEP LEARNING-BASED RECONSTRUCTION FOR CANINE BRAIN MRI COULD IMPROVE IMAGE QUALITY WHILE REDUCING SCAN TIME

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Optimal image quality and shorter scan time for magnetic resonance imaging (MRI) is a major challenging factor in veterinary practices. Recently, application of deep learning-based reconstruction (DLR) have been proposed for ideal diagnostic image quality. The purpose of this prospective, methods comparison, and pilot study was to demonstrate the denoising performance of DLR compared with that of conventional MRI for reducing scan time and improving image quality of canine brain MRI. Clinically healthy 12 Beagle dogs underwent transverse T2-weighted (T2W) and fluid attenuated inversion recovery (FLAIR) sequences. Using three different number of excitations (NEX) and DLR, five image groups were obtained: NEX4, NEX2, NEX1, NEX2_{DL}, and NEX1_{DL}. The scan times were recorded, signal-to-noise ratio (SNR) and contrast-to-noise ratio (CNR) was calculated for quantitative analysis. Moreover, five blinded radiologists assessed overall quality, contrast, and perceived SNR on 4-point Likert scales. Quantitative and qualitative values were statistically compared among the groups. NEX2 and NEX1 showed scan time reduction by 50% and 75% relative to NEX4, respectively. The mean SNR and CNR values of both DLR-applied images were significantly superior to NEX4 and their non-DLR counterparts ($P < 0.05$). In all image quality indices, DLR-applied images for both T2W and FLAIR images were significantly higher than NEX4, and NEX2_{DL} was significantly higher than NEX1_{DL} in FLAIR ($P < 0.05$). This study revealed that DLR-applied images reduce acquisition time and improve image quality compared to conventional images.

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DEEP LEARNING-BASED RECONSTRUCTION CAN REDUCE SLICE THICKNESS WITH IMPROVING IMAGE QUALITY IN THORACOLUMBAR MRI IN DOGS

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Deep learning-based reconstruction (DLR), which is a part of artificial intelligence has been applied in diagnostic imaging. Especially, it is needed to obtain thin-sliced images for small animal patients in veterinary medicine. We hypothesized that the diagnostic performance of thin-slice thoracolumbar magnetic resonance imaging (MRI) with DLR would be superior than conventional MRI. This prospective, methods comparisons and pilot study aimed to determine the adequate slice thickness for deep learning model for thin-slice thoracolumbar MRI. Clinically healthy 12 beagle dogs underwent sagittal and transverse T2-weighted MRI at thoracolumbar region. According to the slice thickness, there were divided into five groups: conventional 3-mm ($_3$ CON), 3-mm, 2-mm, 1.5-mm, and 1-mm with DLR ($_3$ DLR, $_2$ DLR, $_{1.5}$ DLR, $_1$ DLR). Quantitative analysis was evaluated for Signal-to-noise ratio (SNR) values and Contrast-to-noise ratio (CNR) values. For qualitative analysis, perceived SNR, structural visibility, and overall image quality were evaluated by 5 radiologists using 4-point scale. Nerve root visibility was also evaluated on transverse images. Quantitative and qualitative values were statistically compared among five groups. SNR and all qualitative values were significantly higher in $_3$ DLR, $_2$ DLR, and $_{1.5}$ DLR groups than in $_3$ CON and there was no significant difference between $_1$ DLR and $_3$ CON. CNR values were significantly higher in $_3$ DLR and $_2$ DLR than in $_3$ CON. Nerve root visibility was significantly higher in $_2$ DLR, $_{1.5}$ DLR, and $_1$ DLR than in $_3$ DLR and $_3$ CON. This study demonstrated that DLR can reduce the slice thickness up to one-half and improve image quality compared to conventional image.

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INTRAOBSERVER AND INTEROBSERVER AGREEMENT OF LINEAR ULTRASONOGRAPHIC MEASUREMENTS OF THE PROSTATE GLAND IN HEALTHY INTACT DOGS.

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Previous studies have shown higher repeatability of ultrasonographic prostatic measurements when measured in longitudinal than transverse plane. However, recently, the opposite has also been described. The aim of this study was to assess the interobserver and intra-observer variability of ultrasonographic linear measurements of the prostate of intact male dogs in both longitudinal and transverse planes. Fifty-eight healthy intact male dogs of different breeds (3.1-49 Kg) were included in this study. All dogs were determined to have non-prostatic diseases based on history, physical examination findings, haematologic, serum biochemical, urinalyses, and prostatic ultrasonographic examination (volume, echogenicity, and echotexture). Longitudinal and transverse prostatic ultrasonographic images were obtained. Prostatic measurements were performed by five observers with different levels of experience (two board-certified radiologists, one non-board-certified senior radiologist, and two post-graduate students). The prostate was measured in longitudinal plane: length (LL) and height (HL), and in transverse plane: width (WT) and height of both left and right lobes (LT and RT). Each measurement was taken three times per observer. To assess the intra-observer variability, a repeated measures ANOVA was used, and for the interobserver variability, the intraclass correlation coefficient (ICC) was calculated. No intra-observer variability was observed for any of the five observers. The ICCs (interobserver variability) were above 0.86 for all measurements, being the best for HL (0.95) and WT (0.92). In this study, all prostate measurements showed total intra-observer agreement, as well as good interobserver agreement, with the height in a longitudinal plane showing the least variability.

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CARDIAC MAGNETIC RESONANCE IMAGING T1 MAPPING AND EXTRACELLULAR VOLUME FRACTION ESTIMATION IN DOGS: A PILOT STUDY

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Cardiac T1 mapping and extracellular volume (ECV) fraction estimation enables additional characterisation of myocardial lesions in people. Native T1 and ECV are dependent on magnetic resonance imaging (MRI) system, protocol and biological factors. No T1 mapping protocol nor T1 and ECV reference values are available for the 3T Siemens Magnetom Prisma MRI, restricting use in dogs for research and clinical purposes. This study aimed to validate a cardiac T1 mapping and ECV estimation protocol in healthy dogs. Two healthy dogs were anesthetized using inhalation anaesthesia. T1 mapping was performed under apnoea, before and 10 min after an intravenous 0.1 ml/kg Gadobutrol contrast bolus (Gadovist 1.0 mmol/ml). Scans were performed using a 3 Tesla system (Prisma Magnetom, Siemens) and phased array Biomatrix Body 18 and Biomatrix Spine coil (Siemens). Scan settings were: slice thickness 5.0 mm, flip angle 35 degrees, repetition time 261.37 ms, echo time 1.2 ms, field of view 360 mm. T1 measurements were made on a four-chamber image, in the posteroseptal and anterolateral wall, as well as in left ventricular lumen. Cardiac T1 mapping was feasible in both dogs. Septal and free-wall ECV values were respectively 26.7% and 25.6% in Dog 1 and 25.1% and 24.6% in Dog 2. This pilot study shows that T1 mapping and ECV estimation is feasible in dogs and provides a valid and safe MRI protocol. Establishment of a T1 and ECV reference interval and validation on a larger number of healthy dogs is required.

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ECTOPIC MICROCHIP MIGRATION IN THE PULMONARY ARTERIES IN TWO DOGS

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Microchip erratic migration has been reported in various locations (skull, brain, spine...) but never in pulmonary arteries. The first case of pulmonary artery microchip migration reported here is possibly associated with pulmonary hypertension contrary to the second case which is an incidental finding. Case 1 was an 8-year-old Siberian Husky presented for acute, restrictive dyspnoea of two-day duration. Thoracic radiographs of the thorax revealed bilateral pleural effusion associated with a small metallic foreign body (FB) in the caudal part of the lungs, compatible with a microchip. Echocardiography revealed moderate pulmonary hypertension. Computed tomography confirmed that the shape of the FB was consistent with a microchip located in the right caudal pulmonary artery. The FB was confirmed to be a microchip at surgery. Case 2 was an 11-year-old crossbreed dog (7 kg), with an incidental microchip identified in the left caudal pulmonary artery on CT examination performed for investigation of a colic mass. Echocardiography was within normal limits without sign of pulmonary hypertension. Ectopic microchip migration in a pulmonary artery can be either potentially associated with pulmonary hypertension and warranting surgical treatment (case 1) or be an incidental finding (case 2).

EVALUATION OF INTRAPULMONARY ARTERIOVENOUS ANASTOMOSES(IPAVA) USING SALINE CONTRAST ECHOCARDIOGRAPHY (SCE) IN HEALTHY DOGS AT REST

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Intrapulmonary arteriovenous anastomoses (IPAVA) are blood vessels that bypass the pulmonary capillary network, which makes the right-to-left pulmonary shunt flow. Although IPAVA has been reported in dogs in exercise and in dogs with pulmonary infections, to the authors' knowledge, it has never been reported in healthy dogs at rest. Therefore, this study aimed to evaluate IPAVA in healthy dogs using bubble contrast echocardiography. Among the dogs presented for medical check-up, 15 healthy dogs at rest whose owners agreed to exclude congenital heart diseases through bubble contrast echocardiography were included in this study. The existence of IPAVA is confirmed when a microbubble injected into the cephalic vein is recognized in the left heart at least 3 cycles after being visualized in the right heart. The degree of bubble contrast opacification in the left heart by IPAVA was defined as the following bubble scores; 0, no bubble; 1, ≤ 3 bubbles; 2, 3–12 bubbles; 3, >12 bubbles; 4, heterogeneously distributed bubbles; 5, homogeneously distributed bubbles. A significant bubble score of 2 or higher was observed in 6/15 dogs. Our results suggest that IPAVA can be identified in dogs during routine echocardiography, and bubble contrast echocardiography can be useful for evaluating IPAVA in dogs.

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PRESUMPTIVE DIAGNOSIS OF SPONTANEOUS PNEUMOTHORAX BASED ON CT FEATURES

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The aim was to identify the computed tomography (CT) findings allowing discrimination between spontaneous pneumothorax aetiologies. The CT examinations of dogs with a suspicion of spontaneous pneumothorax were retrospectively reviewed by two blinded ECVDI specialists according to specific roentgen signs: volume and distribution of pneumothorax, pneumoderma, pneumomediastinum, presence of bullae (localization, number and size), presence of foreign body, cavitory lesion or mass, bronchial changes, pleural thickening, subpleural ground attenuation, pleural effusion, signs of pleuritis, signs of mediastinitis and thoracic lymphadenopathy. The presence of these signs according to different diagnoses was analysed by the chi-square test. Statistical significance was set at $p < 0,05$. Thirty-one dogs were included. Presumed aetiology of pneumothorax determined by CT was: bullae/blebs (24,2%), foreign body (46,7%), neoplasia (19,4%) and abscess (9,7%). Agreement on the final diagnosis between the two radiologists was 96,7% (30/31 cases). The combination of sternal lymphadenopathy, pleuritis and mediastinitis was positively correlated with foreign body origin ($p < 0,05$). These findings, together with cranial mediastinal lymphadenopathy, were associated with the presence of abscess ($p < 0,05$). Pneumoderma was statistically more frequently identified in cases of bullae/blebs ($p < 0,05$). Pulmonary masses were present in 83% of the cases of neoplastic pneumothorax with a positive correlation between the presence of a mass and the final diagnosis ($p < 0,05$). A presumptive aetiology of spontaneous pneumothorax may be determined according to specific CT roentgen signs.

COMPUTED TOMOGRAPHY OF INCIDENTAL GASTROESOPHAGEAL INTUSSUSCEPTION IN AN AGED DOG – A CASE REPORT.

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Gastroesophageal intussusception is considered a life-threatening condition affecting mostly very young large and medium breed dogs. To the best author's knowledge, no asymptomatic gastroesophageal intussusception in an aged dog has been reported. A ten-year-old male Golden Retriever has been referred for a follow-up computed tomography for re-staging of anal sac adenocarcinoma excised thirteen weeks prior. Apart from surgical excision of the anal sac mass, the patient has been systemically treated with toceranib. No clinical symptoms related to gastrointestinal tract were reported. Plain and post-contrast (portal and delayed venous phase), abdominal computed tomography with caudal thorax and perineal area included in the field of view was performed (2.0mm thick slices; medium and high frequency reconstruction kernel; soft tissue and bone windowing). The caudal thoracic oesophagus was markedly dilated and gas filled. Heterogenous, cranially convex soft tissue density outlined by gas has been identified within the caudal oesophageal lumen, extending from 6.5 to 10.0cm cranially when measured from the level of oesophageal hiatus, depending on the respiratory phase. Distinct layering of the lesion was consistent with typical appearance of the stomach, interpreted as gastric cardia and part of the fundus. The patient has recovered well from general anaesthesia and was clinically asymptomatic. Re-check thoracic radiographs did not show abnormalities in the region of the caudal oesophagus. Transient gastroesophageal intussusception secondary to oesophageal dilation due to general anaesthesia was suspected in this case. Similar abnormalities detected during imaging procedures performed under general anaesthesia should be correlated clinically.

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POST-MORTEM COMPARISON BETWEEN MAGNETIC RESONANCE IMAGING AND DUAL ENERGY COMPUTED TOMOGRAPHY WITH VIRTUAL NON-CALCIUM AND COLLAGEN MAPPING OF THE EQUINE FOOT: A PROOF OF CONCEPT

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A 23-year-old horse was presented with a severe left front limb lameness of one month. The clinical, radiographical and ultrasonographic examination revealed a severe chronic penetrating nail injury involving the navicular bursa, the navicular bone, the distal phalanx, the deep digital flexor tendon, and surrounding structures. Bacteriology after synoviosynthesis of the navicular bursa was positive with *Streptococcus uberis*. After two days of systemic and local antibacterial, anti-inflammatory, and opioid treatment, the owners decided to euthanise the horse. Immediate post-mortem Magnetic Resonance Imaging (MRI; Esaote) using multiplanar T1, T2, PD, STIR and XBONE sequences was performed, followed by Dual Energy Computed Tomography (DECT; Aquillon One, Cannon), gross post-mortem and histopathology. DECT post-processing Virtual Non-Calcium (VNCa) and Collagen mapping (cMap) were compared to MRI, gross post-mortem, and histopathology. Bone oedema-like lesions of the distal phalanx and the navicular bone and the large tear of the deep digital flexor tendon were detected on VNCa, cMap and MRI. Histology confirmed osteonecrosis, fibrosis, and haemorrhage of the navicular bone, and diffuse eosinophilic material surrounding the capillaries of the distal phalanx. The deep digital flexor tendon tear was confirmed on gross-post mortem. VNCa and cMap are promising DECT techniques for the diagnosis of musculoskeletal abnormalities in the horse, such as bone edema-like lesions and tendinopathy with much shorter acquisition times than MRI. Further examination in a larger cohort of patients and in patients with different pathologies is warranted.

CONGENITAL HYPEROSTOSIS OF RADIUS AND ULNA IN PIGLETS: CT FEATURES AND IS THERE A LINK WITH CONGENITAL VASCULAR DISORDERS?

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Two littermate piglets were born with thickened forelimbs. They both died naturally at day 2 and 3 after birth. Congenital hyperostosis was the presumptive diagnosis. The piglets were presented for necropsy to the Veterinary Pathology Diagnostic Centre in Utrecht, The Netherlands. Full body postmortem computed tomography (CT) was performed on both piglets with a 64-slice scanner. Subsequent necropsy included gross examination and histology. Gross pathology revealed thickened forelimbs and a patent (probably functional) ductus arteriosus in both piglets. CT examination showed a bilateral marked amount of rough to smooth and solid periosteal new bone formation along the entire diaphysis of radius and ulna, associated with diffuse soft tissue swelling surrounding the antebrachium. The region of the ductus arteriosus could not be assessed in detail due to postmortem scanning and lack of contrast in the vessels. Histology of the radius and ulna showed periosteal new bone formation with fibrosis, a thickened subperiosteal region and periosteum up to 4 times normal thickness. This is the first description of CT features of congenital hyperostosis in piglets, a rare congenital disease of unknown aetiology. It has similar features with familial infantile cortical hyperostosis (Caffey's Disease) in Rhesus Monkeys, craniomandibular osteopathy and calvarial hyperostosis syndrome in dogs. Two pathogeneses are hypothesised in congenital hyperostosis in piglets: an autosomal recessive trait or a local circulatory disturbance. The finding of concurrent patent ductus arteriosus in both piglets might make this second hypothesis more plausible.

COMPUTED TOMOGRAPHY AND NEPHROLITH REMOVAL OF A WARMBLOOD STALLION WITH BILATERAL NEPHROLITHIASIS

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Computed tomography (CT) has revolutionized the veterinarian's ability to image the equine head, neck and limbs and led to improvement in diagnostic accuracy and clarity for surgical planning. CT of the thorax or abdomen in an adult horse is rare due to the size and the difficulty fitting the horse in the gantry. A 13-year-old warmblood stallion (460 kg) was presented with chronic weight loss, hypercalcemia and azotemia. On transcutaneous and transrectal ultrasound examination a hyperechoic mass and dilated of the renal pelvis was identified in both kidneys and was palpable on transrectal examination of the left kidney. For defining further therapy planning a CT of the caudal abdomen and pelvis was performed under general anaesthesia. Nephrolithiasis was identified in both kidneys with the left one being much more affected. The image quality was satisfying and the results were useful for surgical planning. Partial rib resection and nephrotomy of the right kidney was performed under general anaesthesia and the nephrolith (5x5cm) was successfully removed. Due to this novel surgical procedure in equine medicine and the unpredictable outcome, the procedure was only performed on one kidney. The horse recovered from anaesthesia, hypercalcemia and azotemia improved significantly over the next few days. However, the horse developed multiple complications (surgical site infection, colitis and thrombophlebitis) and was euthanized 3 weeks post-surgery. In summary, CT of the caudal abdomen in an adult warmblood was feasible to perform and image quality was helpful for choosing the most appropriate treatment option.

USE OF CONTRAST-ENHANCED COMPUTED TOMOGRAPHY (CECT) IN THE EVALUATION OF THE EQUINE LARYNGEAL VASCULATURE

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Intraoperative haemorrhage is a frequently observed complication during surgical procedures performed on the equine larynx. Knowledge of the anatomy may help reduce the likelihood of this. There are currently limited anatomical descriptions of the vascular structures of this area. The objectives of this study were to investigate whether there are anatomical variations in the vasculature, and to determine usefulness of the CECT in mapping of the vascular pattern. Eleven equine cadaver heads were included in this study. Both common carotid arteries (CCA) were flushed using 5L of isotonic solution for each side and 12G intravenous cannulas were sutured in place. Iodinated contrast medium was injected into the CCA using a power injector and CT images were acquired. The procedure was repeated for the contralateral side. Obtained images were evaluated using multiplanar reconstruction and 3-dimensional rendering with the use of a medical DICOM viewer. Good visualization of the vascular structures around and of the larynges were achieved for all specimens. Four different vascular patterns were identified with the most observed standard pattern present in 73% of the cases. Twenty-seven percent of horses showed different variations which were present unilaterally in two individuals and bilaterally in one. Anatomical variations in the vascular pattern of the larynx are observed in horses. Presence of laryngeal arteries branching directly from the CCA in 27% of horses may correlate with a greater risk of haemorrhage. CECT provides good visualization of the vascular structures on equine cadavers.

STANDING CONE-BEAM COMPUTED TOMOGRAPHY (CBCT) EXAMINATION IN 71 HORSES WITH CLINICAL SIGNS OF CERVICAL SPINE DISEASE – A CORRELATION WITH RADIOLOGICAL AND SCINTIGRAPHIC FINDINGS

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This retrospective descriptive study aimed to report first experiences, using CBCT for examination of the cervical spine in standing equids. Horses with clinical signs suggestive for cervical spine disease, which underwent radiographic, scintigraphic and CBCT examination of the neck were included. Images were blinded and scored retrospectively by one experienced clinician. CBCT findings were categorized. Radiographs were scored according to Down and Henson (2009). Scintigrams were graded as “physiological”, “slightly increased radiopharmaceutical uptake (IRU)” and “highly IRU”. A total of 71 horses and 236 articular process joints (APJ) were evaluated. The included horses showed forelimb lameness (group “L”, 18), ataxia (group “A”, 11) and nonspecific performance or rideability issues (group “R”, 53); multiple allocation within the clinical groups was possible. In most horses the caudal cervical vertebrae were affected (C6/C7: 98.6%). Most frequent CBCT findings (strongly represented within group “R”) included osteophyte formation at the cranial AP (61%) and narrowing of the intervertebral foramina (48.3%). The number of CBCT findings was higher in horses with higher radiographic scores. None of the 76 APJ without changes in CBCT was considered “physiologic” in radiographs. 55 APJ resulting “physiologic” in scintigraphy, also showed no changes in CBCT. An IRU correlated with osteophyte formation at the AP (cranial: 82.6%, caudal: 91.6%), cyst-like lesions (92.9%) and AP fragments (100%). CBCT allows thorough assessment of bony changes of the cervical vertebrae in standing horses. Scintigraphy is considered a sensitive screening method, localizing areas of interest to be examined by CBCT.

EVALUATION OF DIFFERENT ULTRASONOGRAPHIC TECHNIQUES TO DEPICT THE DDFT-TENDON SHEATH AND MANICA FLEXORIA LESIONS

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Aseptic tenosynovitis of the digital flexor tendon sheath is often caused by defects of the deep digital flexor tendon (DDFT) and/or the proximal Manica flexoria (MF). This study evaluates the value of different ultrasonographic techniques for detection of MF lesions and marginal DDFT tears. Horses included showed ultrasonographic signs of marginal lesions of both structures and underwent tenoscopy as gold standard. Images were analysed using a scoring system.

Ultrasonography was performed with the horse either weight bearing and non-weight bearing in non-orthogonal, medial and lateral directed ultrasonographic orientation. A fourfold table was created for each localization and probe position and validated using the Fischer-Yates-Test. The study included 146 horses. Marginal lesions of the DDFT were more often diagnosed in the forelimbs and predominantly located at the lateral margin (91%). MF lesions were found more often in the hindlimbs. Complete ruptures of the MF were seen in 68% of the horses and were mostly located medially (94%). An agreement of ultrasonographic and tenoscopic findings was seen in 91% of complete MF tears, in 50% of incomplete medial MF tears and in 80% of incomplete lateral MF tears. 83% of marginal DDFT lesions were identified by both techniques. The sensitivity of ultrasonographic assessment of the MF was notably improved in a non-weightbearing limb position. Ultrasonographic evaluation of the MF can be improved with the limb in non-weightbearing position and with a non-orthogonal distally oriented sonographic orientation off the long axis.

FEASIBILITY AND REPRODUCIBILITY OF 2D-SHEAR WAVE ELASTOGRAPHY IN EVALUATING MENISCAL STIFFNESS IN HORSES

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Stifle injuries are a major cause of hindlimb lameness in horses (1). Soft tissues of the joint are the most affected, therefore ultrasonography is more sensitive and specific than radiography (1,2). Elastography is an ultrasonographic technique that allows measurement of tissue stiffness (3). The aim of this study was to determine feasibility, reproducibility, and repeatability of two-dimensional Shear wave elastography (2D-SWE) and to evaluate its diagnostic efficiency to discriminate between sound and degenerative menisci in horses. Methods: 2D-SWE was independently performed by two operators with a Logiq S8 (GE Healthcare) and a high frequency linear probe (10 MHz) under sedation after owner consent. Elastographic images were blindly analysed by two observers, manually drawing 3 regions of interest (ROI) of 1 cm in diameter at 3 different sites of each meniscus. Shear waves velocity (m/sec) and Young's Modulus (kPa) were calculated three times at each selected ROI. Statistical analysis was performed with SPSS 27.0 ($P < 0.05$). 25 horses were enrolled and divided in 3 groups. Intra and interobserver agreement were excellent. Inter-operator variability was fair. The middle/axial site of the meniscus was significantly stiffer than the abaxial. Healthy menisci were significantly stiffer than degenerative menisci. Due to its excellent repeatability, but fair reproducibility, 2D-SWE should be applied with caution in clinical settings, especially in less experienced operators. Findings from our study, however, support future clinical application of 2D-SW elastography as a non-invasive imaging modality which could provide additional information about meniscal elasticity.

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