



Australasian Association of Veterinary Diagnostic Imaging

NEWSLETTER Dec 2010

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AAVDI Newsletter Christmas 2010



Image courtesy of the Daily Mail

We hope all members are enjoying the festive season and looking forward to the New Year. I am hoping Santa is going to fit a nice new Lumimed lightbox down my chimney. Mika, Secretary.

2011 AAVDI conference: Practical Veterinary CT

AAVDI in association with the ACVSc Radiology Chapter.

28-29 June 2011 – Gold Coast

AAVDI and the Radiology Chapter of the Australian College of Veterinary Scientists will be jointly running an advanced CT workshop prior to the start of Science Week, 2011 (30th June-2nd July 2011). This workshop is the first such interactive learning opportunity for CT to be provided in the Australasian region.

The sessions are aimed at three groups of vets: specialists who have CT in their practices or access off site, residents in training, and GP veterinarians with an interest in and access to CT. All aspects of small animal

CT will be covered in a small group environment, including neurological studies, respiratory and abdominal work, and musculoskeletal cases. The workshop will focus on teaching you how to get the most out of your studies by showing you practical tips for using CT, and is heavily case oriented. All participants will be provided with dummy CT workstations, so they can work through the case material at their own pace. Special sessions on advanced CT manipulation (multiplanar reconstructions, volume rendering, and vascular studies) will be included.

Dr Ian Robertson DACVR is the keynote speaker; Ian resides in North Carolina, USA and has a wealth of experience in the CT field. Ian will be backed up by local radiologists with extensive CT and teaching experience and an experienced CT technician.

This workshop would benefit those in surgical, medical, neurological or radiological practice. AAVDI is pleased to present this seminar, the likes of which has not been available in Australia previously.

The CT Workshop will run on Tuesday 28th and Wednesday 29th June at the Gold Coast International Hotel, Surfers' Paradise. Numbers for this workshop are strictly limited to ensure each participant has a workstation. Register your interest now by emailing Zoe (zlenard@perthvetspecialists.com.au) and you will be first to receive further details in the New Year. AAVDI and the Radiology Chapter acknowledge the generous support of Philips

Australia for provision of the CT workstations.

AAVDI MRI conference Sydney 2010.

In June 2010 AAVDI welcomed Dr Pat Gavin to Sydney for our annual conference entitled "Practical Veterinary MRI". Pat brought with him a wealth of experience in performing and interpreting MR images. Limited places were available at this conference and it was quickly fully subscribed. It was great to see some attendees from other disciplines including surgery taking advantage of this opportunity.

The program covered practical tips for sequence selection, application of contrast agents and artifacts. There were plenty of interactive sessions designed to improve our interpretation of MR of the neurocranium, splanchnocranium, spine, thorax, abdomen, musculoskeletal system and vascular studies.

To compliment Pat's lectures, local speakers included Dr Zoe Lenard who discussed the experiences of the team at the Veterinary Imaging Centre in Perth, WA with a vertical 0.3T magnet; and Dr Cathy Hughes who gave a technical insight into image sequence selection and manipulation for low field strength magnets based on her experience at the University of Sydney Veterinary Teaching Hospital.

A feature of the conference was the ability of participants to take



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part in interactive case studies at individual computer workstations which enabled a very practical approach to learning.

Many thanks to the organising committee (Shelley Aukett, Graeme Allan and Zoe Lenard) such a successful event.

Case report

Courtesy of the Veterinary Imaging Centre, Perth Veterinary Specialists, Western Australia.
Dr Mika Frances

Signalment: 6.5 year old female speyed Bernese Mountain Dog

Presenting problems: Inappetance, weight loss, polydipsia (now resolved), coughing, prominent spleen and increased respiratory effort.

Laboratory testing:

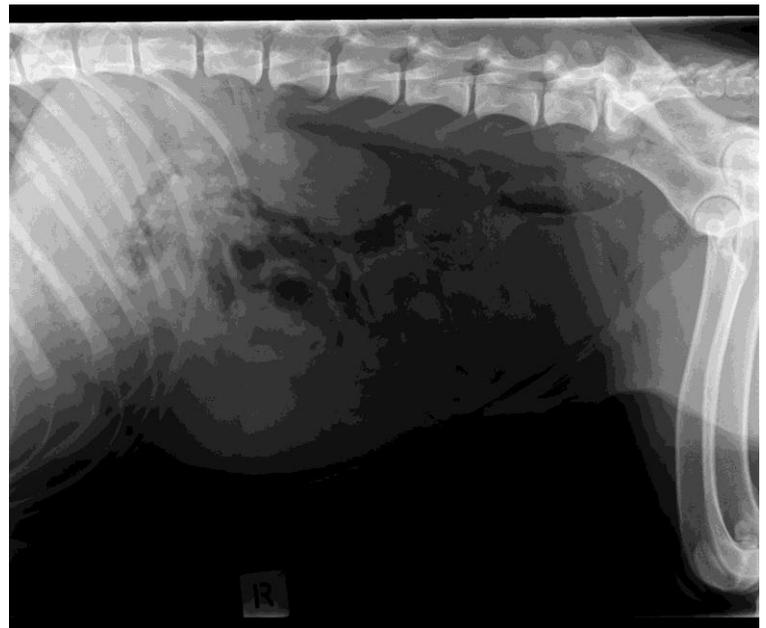
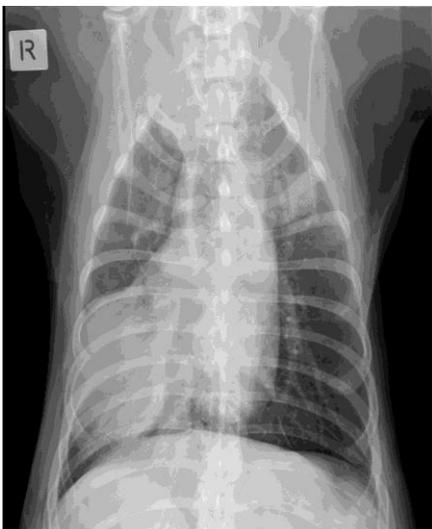
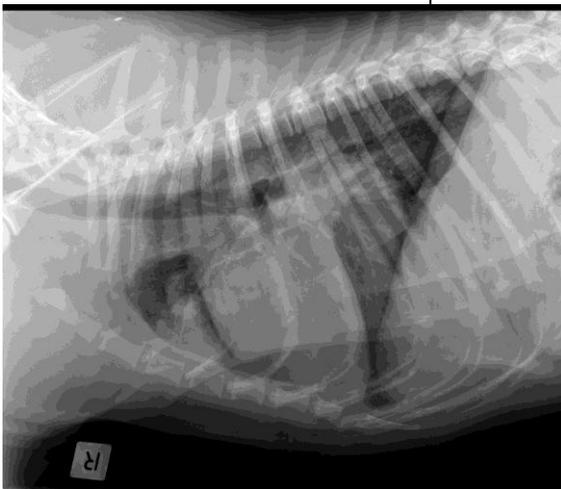
Investigations previously performed: Feb 2010- CBC and Biochem at a commercial laboratory: unremarkable.

Radiology:

Examination:

Thorax: ventrodorsal, R and L lateral (limited projections presented)

Abdomen: R lateral, presented below. See the website for larger images.





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Case report continued:

What were the major findings?

The heart and pulmonary vasculature appeared within normal limits. In the ventral region of the right caudal lung lobe was a large (100x70 mm), soft tissue opacity mass occupying approximately 50% of the lung lobe. The mass was defined cranially by the lobar boundary with the right middle lung lobe. There were additional smaller nodules and masses within the left cranial lobe (40mmx40mm), right cranial lobe (20x20mm) and left caudal lobe near the tip of the lobe (25x25mm). They were well marginated with the exception of the mass in the left cranial lobe ventrally, which had indistinct margins, and silhouetted with surrounding vessels. The remaining lung fields were of normal opacity. In the cranial mediastinum there was increased soft tissue opacity with a rounded caudal margin and mild dorsal displacement of the trachea at the thoracic inlet: this extended more to the right side on the VD projection. A single lateral projection of the abdomen was obtained at the request of the clinician. The liver was within normal limits for size. The spleen was in its usual location in the ventral mid-abdomen, however it appeared to be enlarged and a round soft tissue mass that appeared to be part of the spleen was displacing the small intestinal loops more dorsally than normal.

In conclusion there were multifocal pulmonary nodules/masses, suspect cranial

mediastinal lymphadenopathy and moderate generalised splenomegaly with a possible associated mass.

What were the differential diagnoses?

Malignant histiocytosis was considered highly likely based on the pattern of abnormalities, history and breed. Lymphosarcoma was the other primary differential diagnosis.

What should we do next?

A complete abdominal ultrasound was performed. No abnormalities of the liver, kidneys, adrenals, urinary bladder or gastrointestinal tract were identified. A small (24 x 36mm) hypoechoic to mixed echoic mass with well defined but mildly lobulated margins was present with the body of the spleen - this did not distort the parenchyma or margins. There was no lymphadenopathy or free fluid. A limited evaluation of the right caudoventral thorax allowed visualization of the radiographically identified pulmonary mass - this had a coarse, granular mixed echoic appearance with lobulated margins.

A fine needle aspirate was collected from the lung and spleen. The following results are courtesy of VetPath, Western Australia (Dr Sue Beetson).

LUNG ASPIRATE: The smears contain a pale proteinaceous background with a moderate amount of fresh blood and associated leukocytes and platelet clusters.

Mixed with the blood are scattered small clusters of large poorly differentiated cells. These cells have a variable N/C ratio and are exhibiting moderate to marked anisocytosis and anisokaryosis. They contain 1-3 nuclei with a clumped chromatin pattern with 1-2 large and prominent nucleoli. Small numbers of activated macrophages are also present.

DIAGNOSIS: The smears are suggestive of poorly differentiated tumour of possible histiocytic origin.

SPLENIC ASPIRATE: no definitive diagnosis

The outcome, as often is the case with malignant histiocytic disease was a sad one, with the patient being euthanased shortly after diagnosis.

Malignant Histiocytic Disorders in Dogs

Histiocytic disorders in the dog include cutaneous histiocytoma, cutaneous or systemic histiocytosis, malignant histiocytosis (MH) and histiocytic sarcoma. Primary affected sites are spleen, lung and bone marrow with secondary reported lesions in lymph nodes, liver, central nervous system, subcutaneous tissue, bone, skeletal muscle, kidney and other sites. Presenting clinical signs include anorexia, weight loss and lethargy (1). Many dogs have respiratory signs including coughing, dyspnoea and abnormal lung sounds. Anaemia is a common laboratory abnormality, often progressing to pancytopenia with bone marrow failure (2)



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Clinical signs and laboratory abnormalities are insufficient to provide a definitive diagnosis of malignant histiocytic disease (1). In one study Bernese Mountain Dogs were found to be 225 times more likely to develop MH than other breeds. Rottweilers are 26 times more likely and Golden Retrievers 3.7 times more likely. (4)

The clinical course is generally rapid with all dogs in one study progressing to death or euthanasia within six months of diagnosis. (4)

Thoracic and skeletal radiographs and abdominal ultrasound have been used to provide diagnostic information in this multi-organ disease.

Skeletal lesions

In 2007 a retrospective study looked at skeletal lesions in 19 dogs with MH (1). Bernese Mountain Dogs were found to be more likely to be affected by histiocytic sarcoma but in this study and another other breeds were more likely to develop bone and articular involvement. 16/19 Presented for pain/lameness with or without a mass, 6/19 with neurologic signs, 3/19 had both. Bone lysis including cortical destruction was identified in all dogs (motheaten, permeative, punctuate). Bony proliferation was variable. The radiographic findings of histiocytic sarcoma in the proximal humerus were subjectively similar to those of other neoplasia eg osteosarcoma – ie monostotic, aggressive, metaphyseal. When comparing different types of joint neoplasia in dogs with similar

radiographic appearance, synovial cell sarcoma was more than three times more common than other tumour types including MH. This is significant because the prognosis is significantly worse for histiocytic sarcoma than synovial cell sarcoma.

Neurologic lesions

Four dogs with peripheral neurologic dysfunction had survey spinal radiographs without any detectable abnormalities. Myelography revealed 1 intradural intramedullary compressive lesion and 2 extradural compressive lesions. One had an extradural mass found at necropsy. (1)

Thoracic lesions

Radiographic findings of histiocytic sarcoma include enlargement of hilar, sternal and or mediastinal lymph nodes, alveolar disease with or without consolidation, interstitial nodules/masses and/or pleural effusion (1). In one study of 14 dogs, approximately 50% had thoracic lymphadenopathy – including sternal, hilar or cranial mediastinal nodes, or a combination. Approximately one third had pulmonary parenchymal lesions including 2 with a diffuse /mixed pattern, 3 had nodular infiltrates and 2 had masses > 3cm (4)

Abdominal ultrasound findings

In the literature reviewed, the most common findings were multiple hypoechoic splenic nodules with well defined

borders +/- disruption of splenic margin (2, 3). Hepatic lesions were the second most common finding. One study found variable appearance to hepatic lesions (2), in another all liver lesions were hypoechoic nodules (3).

There is a lower incidence of renal nodules which have a variable appearance (2,3). Abdominal lymphadenopathy was less common than splenic/hepatic changes (3). Where present, lymph nodes were large, hypoechoic, rounded (2,3) Fine needle aspirates from sonographically affected organs were suggestive of neoplasia in 15/16 dogs in one study(2). Malignant histiocytosis was found in stomach of one patient as a single well circumscribed hypoechoic mass (3)

The differential diagnosis list for splenic nodules that have a similar sonographic appearance to malignant histiocytosis includes other neoplasia, nodular hyperplasia, extramedullary haemopoiesis, chronic haematoma, infarction or abscess. Lymphosarcoma is a primary differential for malignant histiocytosis, both conditions can result in hypoechoic nodules and lymph node changes, and have a multicentric nature(2,4).

In summary, abdominal sonographic findings are non-specific. Thoracic radiography with a pattern of nodules, masses or dense focal alveolar infiltration in conjunction with breed and clinical findings may be suggestive. Malignant histiocytic disease should be a



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differential diagnosis for lytic bone lesions, including lesions in the proximal humeral metaphysis of Rottweilers, and for soft tissue masses in the region of joints with or without osseous changes. Definitive diagnosis is likely to require cytologic or histopathologic confirmation.

Treatment options are limited for disseminated disease, but may involve Prednisolone or CCNU. Truly localised disease may be cured by excision.

References:

1 Skeletal Lesions of Histiocytic Sarcoma in Nineteen dogs

Veterinary Radiology and Ultrasound, Vol 48, No 6, 2007, pp 539-543 Schultz et al

2 Ultrasonographic Features of Canine Abdominal Malignant Histiocytosis

Veterinary Radiology and Ultrasound Vol 43, No 2, 2002 Ramirez et al

3 Sonographic Features of Histiocytic Neoplasms in the Canine Abdomen

Veterinary Radiology and Ultrasound Vol 45 no 6 2004 Cruz Arumbulo et al

4 Radiographic Findings in Canine Malignant Histiocytosis

Veterinary Radiology vol 32, no 5 1991, Shaiken et al

Keep your eye on our website

www.aavdi.org for some more interesting cases. All members are encouraged to send interesting images for us all to share:

mfrances@perthvetspecialists.com.au.

Merry Christmas and a safe and prosperous 2011!