

WEAR REFERRALS NEWS

Orthopaedic & Soft Tissue Referral Service

DECEMBER 2006

www.wear-referrals.co.uk



Welcome ...

... to the special Christmas edition of our newsletter. We are very proud to announce that our in-house MRI scanner is now fully up and running and in conjunction with this the website for Wear Referrals has been launched. We would like to thank all referring veterinary surgeons for their continuing support over the last year and wish you all a lovely Christmas and a prosperous New Year.

NEW Website Launch For Wear Referrals



> Our new website www.wear-referrals.co.uk is now fully up and running.

The site allows referring veterinary surgeons to download the following

forms; a referral form for veterinary surgeons, a form with directions to Wear Referrals and a pet owner referral information form. In addition to faxing a referral form it is now possible to submit a referral online. Just fill in the relevant fields and submit your referral. We will then send you a confirmation that we received your information. If you would like to receive newsletters by email, please submit the online registration form or contact us by email. This possibility to correspond by email will save on the use of paper. Interesting cases and new developments will be published on the website.

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In-House MRI Facilities Now Available

Our dedicated veterinary MRI scanner is now up and running. As a fully integrated and permanently staffed facility, the scanner forms a central part of our mission: to

bring a comprehensive referral service to the North-East region, which can take cases quickly and efficiently, thus minimizing delay for your clients' animals. All

staff here have undergone extensive training, both on-site with Easote imaging experts, alongside human radiologists at Oxford and London MRI centers and at the third world Veterinary MRI meeting in Turin last October. This enables us to offer an advanced imaging service, which can safely and reliably investigate and treat cases with the minimum of delay.

We also have the backing of eminent neuro-radiologists (Simon Platt of the AHT) in both the human and veterinary fields who are available for interpretation of non-routine cases - especially important in a field where the knowledge-base is rapidly expanding all the time.

As with all our other services, the extent of your input is tailored to your requirements, with the option of arranging the imaging alone, or having us manage the case from the initial consultation to a full investigation and appropriate medical or surgical therapy.

lesions early can help direct other diagnostic and therapeutic efforts.

Epilepsy

Primary epilepsy usually starts early in life, but can occur at any age. Given that late-onset epilepsy is also treatable with anti-convulsants, it is important to rule out neoplastic/ inflammatory disease in the older patient. Ideally, all cases presenting with altered mentation, fitting or seizures, irrespective of age would receive a brain scan to rule out underlying disease as part of a thorough work up.

Nasal disease

Radiography and endoscopy with cytology or biopsy are currently the mainstay of diagnosis in chronic nasal discharge, epistaxis and sneezing. However, cytology has a low sensitivity for intra-nasal neoplasia, biopsies may be non-diagnostic (often due to non-representative sampling of associated inflammatory tissue), radiography is non-specific and does not delineate soft-tissue masses clearly, and endoscopy can be hampered by lack of access to the entire nasal cavity and a field of view impeded by debris, discharge and haemorrhage.

Historically, many cases of intra-nasal disease have only been diagnosed by exploratory rhinotomy - inherently an invasive procedure. MRI will evaluate the nature of abnormal soft tissue and determine the extent of the lesion,

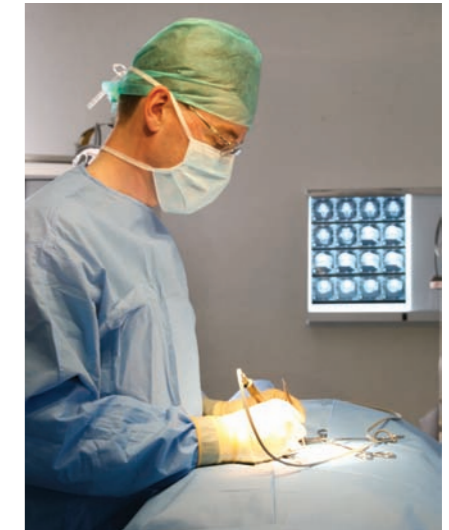
including any involvement of adjacent structures (like frontal sinus, frontal lobe of the cerebrum). It is therefore highly useful in the diagnosis of tumors, foreign bodies and aspergillosis.

Orbital disease

In one study of 25 animals with orbital disease, MRI alone produced an accurate diagnosis in 22 cases. This was superior to radiography, which was only helpful in cases in which neoplastic disease extends markedly beyond the orbit, and ultrasonography, which gave both false positive and false negative diagnoses for neoplastic masses. MRI is recommended for patients in which radiography and ultrasonography fail to produce a confident diagnosis, or for which surgery is proposed.

Spinal disease

Imaging of spinal disease has traditionally relied upon plain radiography and almost invariably, myelography. The latter can be a time-consuming and technically demanding procedure. It is associated with significant risks, including iatrogenic cord/ nerve-root trauma, seizures and occasional fatalities. Interpretation may be compromised if cord swelling is present (as is often the case with acute disc disease). It may not be able to accurately differentiate masses within the neural canal and doesn't provide any information about the cord parenchyma. MRI in comparison allows rapid localisation and characterisation of spinal



lesions, with negligible risks. This has allowed us to greatly improve our surgical planning in spinal disease. In addition to this MRI will also show pathology in tissues surrounding the spinal cord. A recent article on Wobbler's syndrome showed that MRI was significant more accurate in diagnosing spinal cord compression and other pathology seen in conjunction with cervical spondylopathy.

We work closely together with the cavalier King Charles Spaniel club and provide low cost screening for Chiari malformation/syringomyelia.

What are the indications for MRI?

Essential:

- Suspected intra-cranial space occupying lesion
- Suspected raised intra-cranial pressure (especially prior to CSF tap)
- Head trauma

Important:

- Epilepsy
- Inflammatory and congenital brain disease
- Spinal disease
- Chronic nasal discharge
- Pre-operative assessment of tumor margins
- Middle/inner ear disease
- Stick injuries/ suspected foreign body localisation
- Orbital disease

Useful:

- Orthopaedics (stifle, elbow, shoulder, stress fractures)
- Renal disease
- Hepatic disease
- Various soft tissue conditions (prostatic cyst/ abscess/neoplasia)

The most commonly used applications are for diagnosis of intracranial disease, spinal disease and nasal disease.

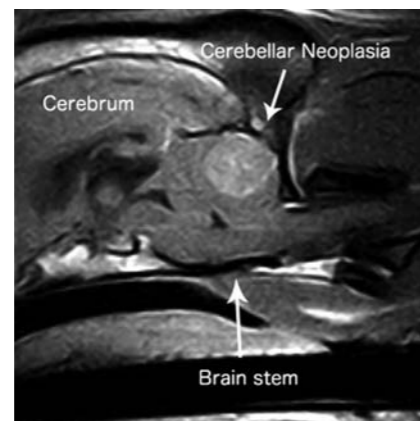


Figure 1 (Left)
Sagittal paramedian T1-weighted post-contrast image of the caudal skull of a seven-year-old English Bull Mastiff showing a well marginated solidly enhancing lesion in the cerebellum. This lesion is most likely a cerebellar meningioma.

Intracranial disease

MRI is currently the best way of imaging intracranial disease, as it is not impeded by the bone of the cranial vault and it provides superior detail of soft tissue structures compared with CT-scans. This makes it invaluable for the diagnosis of brain tumors (Figure 1).

While relatively uncommon in small animals, the incidence of CNS neoplasia

has probably been under-diagnosed historically, due to lack of appropriate imaging facilities. In some cases, long term remission can be achieved by surgical removal/ 'debulking' or radiotherapy. In addition, we have found that many clients appreciate a definitive diagnosis, and thus accurate prognosis in such cases, even if they elect not to proceed with further treatment. Furthermore, ruling out intracranial space occupying

Other Indications

MRI shows some promise in characterising hepatic, splenic, renal and pelvic lesions with some accuracy. The difficulty

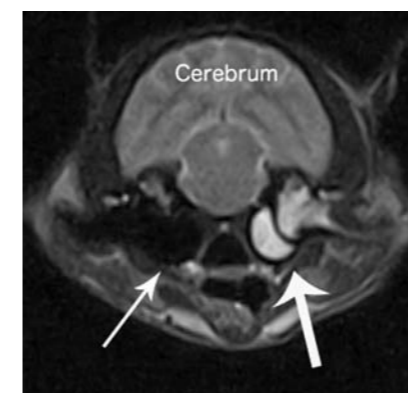


Figure 2:
Transverse T2-weighted image of a four-year-old domestic shorthair cat with ataxia. The thin arrow shows a normal middle ear. The thick arrow shows a middle ear filled with secretum. This lesion is consistent with otitis media with/without an aural polyp. The thin septum is clearly visible.

with this is the time required to achieve a scan, which can mean that abdominal movement leads to respiratory blur. This is less of a problem for kidneys/ pelvic viscera, and more of a problem for the spleen. Hyperventilating the animal can lead to breath holding sufficient to allow time for a scan. Not only the brain tissues can be examined with MRI but at the same time all other structures of the head can be evaluated. This makes differentiating between middle ear disease (Figure 2) and cerebellar disease easier.

MRI is a great tool to assess the extent of neoplastic lesions and hence helps with judging surgical margins for surgical removal. Over the last months we have scanned a significant amount of stifles. This has given us new insights on cruciate disease, meniscal disease, OCD and other bone pathology.

Costs:

The price for a basic MRI sequence is £500 including VAT. This excludes consultation, anaesthetic and any other diagnostic work-ups (like biopsies and

CSF taps). If additional sequences are necessary (like gadolinium contrast studies on brain scans) the price is around £800. Simon Platt of the Animal Health Trust does second readings of all scans of the brain and spine and we work closely together with human radiologist in the field of musculo-skeletal imaging. Wear Referrals will organise an evening meeting on MRI in the beginning of next year.

Continuing Professional Education:

The day meeting titled Neurology in Practice, which was held in September, was a great success with almost forty veterinary surgeons attending. Simon Platt's practical and simple approach to the neurological exam was the highlight of the meeting. Hopefully we will be able to organise another meeting like this soon.

Our next meeting will be on magnetic resonance imaging (see enclosed information) and we will organise an evening on elbow disease in the spring of next year.

Case Report 1: Cervical disk extrusion in a three legged dog



Signalment:

A six-year old female neutered Dalmatian dog which was born with only three limbs (left front limb rudimentary).

History & Examination:

This patient was referred to Wear Referrals with a two-week history of progressive weakness in all legs and increasing neck pain. General examination showed no significant abnormalities. The dog was unable to stand and showed signs of severe neck pain. Good conscious deep pain perception was present in all three limbs. The dog had had steroid responsive meningitis as a puppy.

Differential Diagnosis:

The most likely differential diagnoses for the neck pain combined with the paresis were degenerative disk disease, inflammatory disease (meningitis), infectious disease, neoplastic disease and possible trauma.

Diagnostic work-up:

Full profile blood tests showed no abnormalities. Survey radiographs of the cervical spine showed narrowing of the C6-C7 disk space. After this a MRI scan of the lower cervical spine was performed. The following sequences were used: T1 and T2 (figure 3) weighted scans saggital plane. High Resolution Turbo T2 (Figure 4) and High Resolution Gradient Echo transverse scans. This confirmed the clinical suspicion of a C6-C7 disk extrusion with a ventral, mostly midline extra-dural compression of the spinal cord above the C6-C7 disk space. In addition to this the C4-C5 and the C5-C6 disks showed loss of normal fluid signal and they were inhomogeneous, which was consistent with degenerative disk disease. Directly after the MRI scan a cisternal cerebro-spinal fluid sample was retrieved. In-house analysis showed no signs of meningitis and the dog was taken through to theatre.

Treatment:

A mini-ventral slot procedure was performed on the C6-C7 disk space. The extruded disk material was removed and a fat graft was placed in the ventral slot. The C4-C5 and C5-C6 inter-vertebral disks were fenestrated to prevent future extrusion. Closure of the wound was routine and anaesthetic recovery was uneventful. The dog received physiotherapy and massage whilst being hospitalised for the first week. She made excellent progress and was ambulatory again within five days post-op and started with hydrotherapy the second week post-op. After four weeks the dog was without pain and back to the same activity level as she had been before the disk extrusion.



Discussion:

Cervical disk extrusion is mostly seen in chondrodystrophic dogs. This case was unusual as the dog only had one front limb and she used her head and neck to balance her body significantly more than a normal four legged dog would do. This might have caused excessive strain on the cervical intervertebral disks and caused these disks to degenerate. Magnetic resonance imaging helped us to exactly localise the extruded disk material. This enabled us to use a small ventral slot procedure, which lessens the chance of vertebral instability. In addition, MRI showed us that more disks were degenerative. This was not evident on plain radiographs. By fenestrating these disks we hopefully will prevent future disk extrusions.

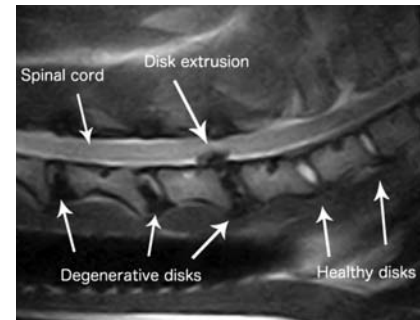


Figure 3:

A saggital T2-weighted image of the caudal cervical spine showing a large disk extrusion and degenerative disks.

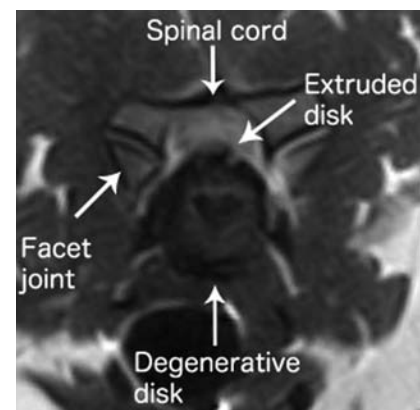


Figure 4:

A transverse T2-weighted image of the same lesion as seen in figure 3. The extruded disk material is lying ventral of the spinal cord and mostly in the midline, which facilitated surgical decompression.