

Spinal radiology: the evaluation - by Chris Warman



When contemplating a series of radiographs, the clinician is frequently drawn to an area of the radiograph where the most dramatic variance from normal anatomy is identified. In many instances, this anomaly is significant and its recognition instrumental in yielding

a definitive diagnosis. However, it is mandatory that the rest of the radiograph should be examined, especially in order to reveal whether other roentgen signs are present which add support to the original tentative diagnosis. Likewise it is important for the clinician to recognize radiographic features that contradict the original tentative diagnosis or lead the examiner to consider other potential diagnoses. In order to fully evaluate features that

may be present within the radiograph, both the experienced and inexperienced clinician needs to perform a systematic examination of the radiograph.



Primary spinal neoplasia

The systematic approach for various body systems does vary between radiologists and is dependent on what the radiologist ultimately feels comfortable with, and is frequently influenced by the manner in which they were taught radiology.

When evaluating spinal radiographs, it is important that the reviewer identifies and mentally records all of the following criteria in order to achieve complete evaluation of the spine. When evaluating the spine, the mental checklist includes; vertebral numbers, vertebral shape, vertebral radiopacity, vertebral alignment, the intervertebral disc space, the true spinal articulation, the foraminal space and the surrounding soft tissue.

Alteration of the total number of vertebra is most commonly seen

in the thoracic and lumbar spine. An additional vertebra is generally more common than a missing vertebra. Additional vertebrae are commonly transitional vertebra. The recognition of transitional vertebra, most commonly in the lumbar spine, is important, as a high incidence of clinical disease is associated with lumbar transitional vertebra, particularly in the German Shepherd.

It is important that the reviewer recognizes normal variance in vertebral shape in the various segments of the spinal cord. Abnormal vertebral shape may be reflective of either congenital malformation or secondary to inflammatory, neoplastic and traumatic disease processes. Alteration of the vertebral shape secondary to accident, inflammatory or neoplastic disease is generally easily identified and a relatively uncomplicated diagnosis. The clinical significance of congenitally malformed vertebra can be more challenging and frequently myelography is necessary in order to define whether compression of the spinal cord is occurring secondary to this malformation.

Alteration in vertebral alignment is generally either associated with malformation-malarticulation syndromes associated with congenital vertebral anomalies or trauma. Whilst the diagnostic importance of vertebral malalignment following a road traffic



Transitional lumbar vertebra

accident is relatively self-evident, altered alignment in congenital disease processes is likely to require myelography, CT or MRI in order to evaluate its clinical importance.

Vertebral radiopacity may be increased or decreased. Alteration in radiopacity may affect the total spine or just one of the vertebral bodies. Altered radiopacity of one vertebral body is typically indicative of either neoplastic or inflammatory disease. A generalized

decrease in radiopacity is reflective of either nutritional, renal or neuroendocrine disease processes. Occasionally generalized vertebral radiopacity is recorded with medullary sclerosis secondary to feline leukemia virus, osteopetrosis or disseminated idiopathic skeletal hyperostosis. The intervertebral disc space is a major area of interest in the examination of the spine. Generally inexperienced clinicians can appreciate abnormalities of the intervertebral disc. The intervertebral disc space may reveal calcified material within or dorsal to the disc space, narrowing of the disc space or widening of the disc space. Intervertebral disc space widening, with loss of the intervertebral endplate and associated vertebral body sclerosis, is strongly indicative of discospondylitis. Discospondylitis may involve more than one intervertebral disc space. Narrowing of the intervertebral disc space is frequently accompanied by both reduction in the foraminal size and the true joint space.

Examination of both the foramina and the true spinal articulation for narrowing can be useful when the clinician is somewhat uncertain as to whether the intervertebral disc space is truly narrowed. It is critical to remember that a narrowed intervertebral disc space is not necessarily responsible for the current clinical signs.

Isolated enlargement of a foraminal space, commonly without enlargement of the intervertebral disc space, is an occasional radiographic finding. Enlargement of the foraminal space in a patient presenting with a unilateral lameness, frequently with significant muscular atrophy, is generally the hallmark of a nerve sheath tumour.

The above summary is a thumbnail sketch approach to spinal radiology. However, by examining the spine in small segments of three and adhering to the examination criteria above, I am certain that your ability and confidence to evaluate spinal radiographs will grow.

The Journal Club Concept - by Mark Robson

Journal Club is a concept that is widespread in the veterinary schools around the world. The specialists at VSG have supported a Journal Club for 8 years now, starting at Onewa Road Vet Hospital and moving to VSG in 2000.

The idea is that a group of vets (and perhaps nurses) meet regularly to discuss a paper from a peer-reviewed journal, a textbook chapter, an article from a conference or a VIN article. One member takes on the role of choosing the material, copying it to all participants and then leading the discussion. This role is rotated among all members.

Currently we have 2 Journal Clubs at VSG. One is on Tuesday mornings at 7.30 with approximately 20 members and covers all topics, the other is at 7.30 on Thursday mornings and is specifically for Internal Medicine discussions. Darren Fry also coordinates a South Auckland Journal Club at 7.30 on Tuesday mornings for participants from that area. New members are welcome for all these meetings, just contact the VSG front desk for details.

Journal Club provides an invaluable mechanism for continuing education in that one cannot help but absorb a large amount of

information from 50-100 publications per year. There is also a great deal to be learned from collegiate discussion around the topic and inevitably someone has seen a case of the disease or syndrome being discussed and can illustrate the points made.

Journal Club does not require a specialist to be present to be valuable, and ideally there would be Journal Clubs all over the country meeting on a regular basis to disseminate new ideas and information. Why not give it a go in your practice, group of clinics or town?

We are indebted to Pfizer New Zealand for their support of our Journal Clubs. They photocopy and mail out the papers each week, and Glen and the team provide a generous morning coffee service at the Tuesday morning VSG meeting, thanks Pfizer!

