Comparisons of computed tomography, contrast-enhanced computed tomography and standing low-field magnetic resonance imaging in horses with lameness localised to the foot. Part 2: Lesion identification

Vallance et al. (2011), in *Equine Veterinary Journal*

Products
Computed tomography (CT), contrast-enhanced CT (CECT), and standing low-field magnetic resonance imaging (LFMRI) for equine foot lameness diagnosis.

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Clinical Background
Equine foot lameness involves diverse lesions in bones, tendons, ligaments, and synovial structures. Accurate detection requires advanced imaging modalities. CT excels in bone visualization, while MRI is superior for soft tissues.

Aim of Study
To compare lesion detection capabilities of CT, CECT, and LFMRI and identify their strengths and limitations in evaluating distal limb lesions.

Cohort Study
Thirty-one limbs from twenty-two lame horses underwent imaging with CT, CECT, and LFMRI. Lesion identification in the distal limb was assessed, with statistical comparisons of modality performance.

Results

- CT and CECT detected more osseous lesions, including **abrasions**, **enlargements**, and **mineralization**, with high bone morphology clarity.
- LFMRI was superior for detecting **core lesions** and **splits** in soft tissues, particularly distal to the proximal extent of the distal sesamoid.
- CECT improved **vascular enhancement** detection at the deep digital flexor tendon insertion and highlighted **ligament vascular changes** in 75% of cases.
- Limitations included CT's reduced sensitivity for distal DDFT lesions and LFMRI's inability to detect soft tissue mineralization.

Summary

- CT provided unparalleled visualization of osseous structures and lesions, enhancing bone morphology assessment.
- CECT improved lesion detection through vascular enhancement, particularly for distal sesamoidean structures.
- LFMRI offered high sensitivity for soft tissue lesions but struggled with pastern and mineralized lesion detection.
- Combining modalities optimizes lesion detection and informs targeted treatment strategies.
- CT and CECT significantly complement LFMRI, offering broader diagnostic capabilities for equine lameness cases.

Link to paper

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