

Comparisons of computed tomography, contrast enhanced computed tomography and standing low-field magnetic resonance imaging in horses with lameness localised to the foot. Part 1: Anatomic visualisation scores

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

Products

Computed tomography (CT), contrast-enhanced CT (CECT), and standing low-field MRI (LFMRI) for diagnosing equine foot lameness.

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Clinical Background

Foot lameness in horses often requires advanced imaging to localize and assess anatomical lesions. CT, CECT, and LFMRI offer unique advantages and limitations for evaluating affected structures.

Aim of Study

To compare anatomical visualization scores of CT, CECT, and LFMRI in assessing the distal limb structures, focusing on soft tissue and bone anatomy in clinical lameness cases.

Cohort Study

Images from 31 limbs of 22 lame horses were analyzed. CT and LFMRI were performed on all cases, with CECT available for 28 limbs. Visualizations of structures like the deep digital flexor tendon (DDFT), phalanges, and synovial tissues were graded on a scale of 0-3 for clarity and conspicuousness.

Results

- LFMRI excelled in visualizing soft tissue structures like the distal DDFT, synovial tissues, and distal sesamoidean ligaments, while CT provided superior visualization of bones such as the phalanges and navicular bone.
- CECT improved synovial visualization but reduced visibility of some tendons and ligaments compared to precontrast CT.
- LFMRI was limited in peripheral regions like the distal phalanx, whereas CT offered better anatomical detail across a broader region.
- CT outperformed LFMRI for pasternlevel imaging, critical for addressing deep digital flexor tendinopathy and multifocal lesions.

Summary

- **CT** and **LFMRI** are **complementary** in diagnosing **equine foot lameness**, with each excelling in distinct **anatomical regions**.
- **CECT** enhances **synovial visualization** but may obscure **fine soft tissue details**.
- Practitioners should consider both the modality and the anatomical structure of interest when choosing imaging techniques.
- CT remains advantageous for bone visualization, while LFMRI is ideal for soft tissue and synovial evaluation.

Link to paper