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CT in equine brain diseases

C. Crijns, I. Gielen

Department of Medical Imaging & Small Animal Orthopaedics, Faculty of Veterinary Medicine, Ghent University, Belgium.

Computed tomography of the head is more and more common in equine practice.

The use of CT to visualise cranial structures and intracranial diseases has several limitations, which should be considered. Firstly, the little difference of x-ray attenuation between white and grey matter results in a limited contrast difference between these two structures. Limiting the ability to distinguish between both, small lesions can be missed. Secondly, the beam-hardening artefact caused by the thick petrous part of the temporal bones of the caudal fossa is causing a hypodense band across the brainstem.

Indications of CT in intracranial diseases are:

- congenital conditions: mostly determining the localisation of a dentigerous cyst or less commonly diagnosing cerebellar atrophy or hydrocephalus.
- traumata: evaluating the extent of a skull fracture and diagnosing brain contusion or the incidence of epidural hematoma
- infections: abscess and encephalitis
- and neoplasia: intra-axial brain neoplasia, pituitary adenoma and cholesterolic granulomas

The application of contrast enhanced CT allows the detection of interruptions of the blood brain barrier and abnormal enhancement of brain lesions in some cases.

Knowing the possibilities and limitations of CT, the use of CT in equine patients for intracranial disease is still challenging. CT is able to rule in, but is not able to rule out intracranial disease. Especially subtle lesions remain undetected with CT.

Beside the ability of CT to detect bony lesions, neoplasia (causing a mass effect with midline shift) and acute haemorrhage, the availability and shorter study time of CT compared to MRI, ensures that CT remains the major neurodiagnostic imaging modality in equine medicine.

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