STANDING COMPUTED TOMOGRAPHY (CT) IN THE EQUINE PATIENT

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Computed tomography (CT) allows a better evaluation of the equine skull than conventional radiographs, providing excellent contrast and spatial resolution. The availibility of CT examination in the equine practice is often limited by the need of general anesthesia and procedure high costs. To avoid the anesthetic complications and reduce the overall cost of the procedures, custumized CT scanners for standing equine patients examination have been developed. The aim of this study is to describe the CT standing system with particular relevance to acquisition protocols and positioning through the analysis of four clinical cases. In addition, advantages and limitations of the procedure will be investigated. In the study were included 4 horses (age 10-21 years) referred for dental or sinonasal disease that underwent a standing CT examination. A multi-detectors 16 slice CT system was used for the study. The horses were sedated with alpha2-agonist and opioids and positioned standing squarely on an air pallet platform connected to the CT table. Thanks to the air-cushion the friction on the floor was almost nulled allowing to the CT table to pilot the horse into the gantry. The equine head was placed in extended position on the CT table and a weight was put on the neck to minimize its movements during acquisition. Images were acquired in contiguous helical mode with 1,25 mm slice thickness. Scanning parameters were 140 kVp and 300 mA. Duration of each scan was in a range of 30-35 seconds. In one horse a remaining dental fragments of the teeth 209 and the presence of an abscess and necrotic tissues in the caudal maxillary sinus were observed. One month after surgical removal of the fragmented teeth, the CT was repeated because of the presence of monolateral nasal discarge. The follow up CT allowed to recognize the presence of a communication between the oral cavity and the cranial maxillary sinus even if the plug was in situ. In two horses a sinonasal cyst was diagnosed. In one horse, referred for headshacking CT exam revealed: cyst like lesion close to the apex of 106 root, hickening of the right nasal bone, fluid accumulation in the right cranial maxillary sinus and thickening of the mucosa of right dorsal concha. In all horses CT examination was performed easily and without complications and an accurate and definite diagnosis was reached in 75% of cases. Minimal motion artifacts were noted without affecting the diagnostic value. The limited availability of CT scanner for standing horse and the possibility to have motions artifacts are the major problems of this technique. A good sedation protocol and well trained staff is mandatory to obtain good quality images safely both for the patient and the personal. The standing CT examination eliminates the risks of general anesthesia and allows to submit the patients to follow-up CT scans without increasing the risk of morbidity. In addition, performing a CT examination on a standing horse affected by neurological disroders is safer and has the same capability of a CT scan performed on a horse under general anesthesia. Last, but not least, performing CT in standing patients can rather reduce the costs of the examination.

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