IMAGING OF CLINICAL VETERINARY PATIENTS AT THE UNIVERSITY OF FLORIDA AMRIS FACILITY

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Introduction

Magnetic resonance imaging is one of the most powerful diagnostic tools available to both veterinary and human neurologists to investigate disease of the central nervous system. The modality has been increasingly used by veterinarians in other clinical specialties to image other areas of the body, including the head, joints, muscles and the thoracic and abdominal cavities. In addition to purely diagnostic applications, MRI is a valuable tool for planning therapeutic intervention in a variety of settings, particularly as it applies to radiation therapy. Improvements in the ability to image certain pathologic lesions, particularly neoplasms, have translated into improved radiotherapy options, including stereotactic guidance of the radiation beam.

Experimental Results and Discussion

We have imaged a number of clinical veterinary patients in the University of Florida AMRIS facility. Over the past year, we have primarily used the Siemens 3T head scanner, although the Oxford 4.7T unit has also been used on occasion. Most patients have been dogs and cats presented to our veterinary hospital for evaluation of neurologic dysfunction. The brain has been imaged most frequently, although the spinal cord, peripheral nerves, nasal cavity and visual systems have also been evaluated. In addition to dogs and cats, a number of exotic and wildlife species have been imaged as well, including birds of prey (fig 1), small mammals (rabbits, ferrets), reptiles (snakes, turtles), an elephant (post-mortem samples) and endangered Florida panthers.

As alluded to above, we have also utilized the Siemens 3T unit to plan radiotherapy in animals with neoplasms involving the brain, head and nasal cavities (fig 2). The images are fused to images obtained with a computed tomography system using software written by University of Florida scientists. This allows stereotactic delivery of the radiation treatment to the affected areas.

Additional diagnostic capabilities of the magnet systems are starting to be explored, including diffusion-weighted imaging for vascular disease and the use of MR spectroscopy for further analysis of discrete masses or other pathologic lesions.

Conclusions

The magnet systems used have provided high quality images, contributing to a diagnosis in a number of our clinical veterinary patients and in many cases facilitating therapy, particularly through the use of stereotactic radiotherapy.

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