Advanced IMAGING

AND THE VETERINARY PRACTICE: PART 1

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Working in the veterinary industry, we often hear people ask, "You can do that on animals?" The answer is, yes! With recent technological advancements, there are now more imaging modalities available for your pet than ever before. If you have heard of a procedure being performed in human medicine, it is likely that it is now being practiced in veterinary medicine as well. Certain specialty veterinary clinics, such as Gulf Coast Veterinary Specialists, can perform computed axial tomography scans (CT), magnetic resonance imaging (MRI), ultrasound, x-ray, fluoroscopy, and nuclear medicine studies to help accurately diagnose your pet's condition.

Of the 6 imaging modalities, CT, also known as a "CAT scan", has become one of the most commonly used techniques, and is performed on a range of different species, both large and small. Previously, CT was only available at academic institutions and in some veterinary specialty practices; however, CT has now made it mainstream and is even starting to become available at some local veterinary practices. This painless and noninvasive imaging procedure has the ability to acquire information not available from other modalities such as radiographs, contrast studies or ultrasound exams.

CT works by using a narrow beam of x-rays aimed at the appropriate location, the scanner is a motorized and quickly rotates around the body around in a circular opening of a donut-shaped structure called a gantry. This structure produces signals that are processed by the machine's computer to generate cross-sectional images or "slices" of the body. CT imaging can be compared to looking into a loaf of bread by cutting the loaf into thin slices. Each time the x-ray source completes one full rotation, the CT computer uses sophisticated mathematical techniques to construct the image slice. The motorized bed is moved forward incrementally into the gantry and the process is repeated to produce another image slice until the entire area has been scanned. When the image slices are reassembled by computer software, the result is a very detailed multidimensional view of inside the body. CT provides a real time images, making it an excellent tool for guiding minimally invasive procedures, such as needle biopsies and needle aspirations of many areas, particularly to the lungs, abdomen, pelvis and bones. It grants the ability to provide detailed images of bone, lungs and other soft tissue and blood vessels all at the same time making it easier to find the exact place where a problem may be located. A diagnosis determined by CT scanning may eliminate the need for an exploratory surgery and surgical biopsy that may be costly and invasive for your pet.

Primary indications for CT are for nasal, lung, abdominal and musculoskeletal disease. It is very effective in visualizing obscured masses in areas of the body, such as the skull, where radiographs often fall short of identifying disease. The ability to image a wide range of diseases makes it one of the best diagnostic imaging tools available. Contrast agents have been developed that are highly visible in a CT scan and are safe to use on our patients. These agents contain substances that make it possible to visualize soft tissue and vessels. Contrast is utilized when looking for possible obstructions in blood vessels or to check the vascularization of tumors and allows the surgeons to better understand if surgical removal of tumors is possible.

Although X-rays are still used in CT, these scans usually have no side effects. The risks associated with CT are minimal but it is important to know that this type of examination does require general anesthesia. Sedation is required to avoid excessive motion because even the best trained dog has yet to master the "hold your breath" trick. CT is still an expensive diagnostic tests in veterinary medicine, but it can be a cost-effective imaging tool for a wide range of clinical problems. Only your veterinarian can determine if a CT would be a beneficial tool in determining your pet's condition.