NUCLEAR SCINTIGRAPHY IN VETERINARY PRACTICE

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Nuclear scintigraphic imaging is a highly sensitive advanced procedure in which radioisotopes are used to detect functional abnormalities of the body systems. It has been used in both small and large animals, in experimental studies as well as in clinical cases. This technique is very useful in diagnosis of occult lameness, to detect brain lesions, to study renal and cardiac function, lung ventilation and perfusion, ureter patency and also useful in detecting neoplasm.

The principle of nuclear scintigraphy is based on the use of a pharmaceutical, which after entry in to the blood stream gets localized in a particular tissue or organ. Before the pharmaceutical is injected it is labeled with a radioisotope. Most commonly used radioisotope is Technitium-99m. Localizations of isotope can then be detected by using detector or camera due to emission of gamma rays from the area of interest. In both cases sodium iodide crystal is used which absorbs gamma rays emitted by the radio isotope from the patient and convert it to light flashes. The light is converted to an electrical impulse. This is recorded in a meter in case of hand held detector. In gamma camera electrical impulses are shown as an oscilloscope or converted to an image. Image can be produced in colour or in gray scale.

A scan appears as an image formed of dots. The interpretation is based on the appearance of increased or decreased radioactivity. An active process produce increased radioactivity.

Even though nuclear scintigraphy has been used to detect functional disorders of almost all organs, it has most widely been used to investigate bone abnormalities. This is because while plain radiograph reflect changes in the bone density and structure, bone scan reflect change in skeletal metabolism and physiological condition. The high diagnostic sensitivity of scintigraphy is due to the multidirectional emission of gamma rays from a lesion, high sensitivity of the detector to the gamma rays and the fact that the changes in the radiotracer distribution are observed earlier than the tissue density can be appreciated on a radiograph.

The main problem associated with scintigraphy is the cost of gamma camera involved, precise precaution required and the difficulty encountered in interpreting the scan. However the limitations do not decrease the diagnostic value of scintigraphy.

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COMPLICATIONS

Complications due to the actual endoscopic examination are rare. Care needs to be taken to prevent perforation of the stomach or intestines during the examination. If tearing does occur, surgical repair is done immediately.

Limitation

The most significant limitation of gastrointestinal endoscopy is the inability to examine the entire length of intestine, especially the jejunum and ileum.

Conclusion

Although not all problems can be solved by endoscopy, a great number of diseases can be diagnosed with less pain and suffering for the animal involved. We can prevent pets from going through extensive operative procedures and prolonged healing times. Endoscopy is one of the tools that will set the course for the future of veterinary medicine.

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