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## **NUCLEAR MEDICINE IN VETERINARY PRACTICE: PRELIMINARY EXPERIENCES AT AZ. POLO VETERINARIO DI LODI**

D. De Zani<sup>1</sup>, M. Longo<sup>1</sup>, C. Pettinato<sup>2</sup>, G. Ravasio<sup>1</sup>, M. Di Giancamillo<sup>1</sup>, D.D. Zani<sup>1</sup>

<sup>1</sup>*DIVET, Università degli Studi Milano, Milan, Italy*

<sup>2</sup>*Fisica Sanitaria, AOU S.Orsola-Malpighi, Bologna, Italy*

### **BACKGROUND-AIM**

Nuclear Medicine have been widely used on animal models. However, in routinary veterinary medicine only few diagnostic techniques, employing radiopharmaceuticals, have been described. Bone scintigraphy has become a well-accepted tool in the investigation of equine lameness but it has not been recognized as a useful clinical tool in small animal practice. Moreover tomographic studies (SPECT) have not received much enthusiasm in veterinary medicine, mainly because of a lack of dedicated equipments. In current literature there are only few studies highlighting the clinical relevance of nuclear medicine also in veterinary oncology, internal medicine and orthopedics.

The aim of this report was to describe the preliminary clinical and experimental experience in nuclear medicine at the Az. Polo Veterinario di Lodi, University of Milan.

### **METHODS**

We study primarily horses but also small animals (dogs and cats) as clinical subjects, as well as pigs and rabbits for experimental protocols.

Horses usually underwent sedation while small animals were examined under general anaesthesia. In our Nuclear Medicine facility we have a single head gammacamera, performing SPECT and planar scintigraphy, and a ceiling suspended stand alone gammacamera head, to investigate large animals like horses.

Equine scintigraphic scans were performed using <sup>99m</sup>Tc-labelled methylene diphosphonate, (<sup>99m</sup>Tc-MDP 1 Gbq/100 kg).

Bone scan were also acquired in dogs in order to investigate lameness localized to the elbow (planar acquisition) and shoulder regions (planar acquisition and SPECT).

Thyroid scans (both planar and SPECT) were performed in dogs injecting <sup>99m</sup>Tc-Per technetate.

Feline injection-site sarcoma (FISS) has been investigated using <sup>99m</sup>Tc-sestaMIBI.

For experimental purposes gated myocardial perfusion SPECT with <sup>99m</sup>Tc-sestaMIBI was performed in piglets affected by induced myocardial infarction.

### **RESULTS**

A total of 26 horses underwent bone scintigraphy. In 24 lame horses bone scan allowed to recognize the site of injuries while in 2 cases, referred for poor performance, no lesions were detected.

In two lame dogs a focal and intense uptake of the radiotracer was observed in planar or SPECT images at level of elbow or shoulder.

Thyroid scintigraphy allowed identification of a mass in 2 dogs. In one case, the mass showed a focal and severe IRU while in the other case, a mild IRU and poorly defined gland margins have been observed.

In the cat with a diagnosis of FISS a very intense and well-defined uptake was observed in the mass localized on the back. No uptake was visible in other sites suspected of metastases as lung or satellite lymph nodes.

Gated myocardial perfusion SPECT allowed the exact localization of myocardial lesions in 2 piglets.

### **CONCLUSION**

Nuclear medicine has high potentiality in veterinary medicine.

In our preliminary experience we can assert that nuclear medicine could be a very useful diagnostic tool, especially in association with other diagnostic techniques as CT or MRI. Furthermore, experimental studies could be helpful in veterinary like human medicine not only for research purposes but also as pre-clinical experiences for future development of new clinical approaches.