

What is a Bone Scan?

A bone scan is a diagnostic procedure where the horse is injected with a radioactive isotope uptake is relative to the osteoblastic activity or metabolism of the bone and the blood flow to the bone in a specific area such as fractures and inflammation, give off greater amounts of radiation.

Radiation

Technetium ⁹⁹ HDP is the radioactive isotope used for Scintigraphy. This has a half-life of 4 to 6 hours and is purchased fresh from a human hospital for each bone scan. The isotope is ordered the day before. The horse must be stabled at the hospital from the day prior to the bone scan.

The Procedure

The horse is exercised and then placed in a heated stable to ensure that the horse is warm and there is a good blood circulation to all areas. The horse is injected with the isotope once it is warm. It takes approximately 2 hours for the isotope to circulate throughout the bloodstream prior to the horse being scanned.

The gamma camera weighs about 300kgs and is suspended from the ceiling on a hydraulic hoist, so the horse is sedated to prevent it reacting to the large, unfamiliar machinery. A series of images are taken. Each picture taken occupies an area of approximately 18 inches and takes about 2 minutes to acquire. A complete full body scan takes between 3-4 hours.

Typical Timescale

We ask that the horse arrives at the hospital the day before the scan. On the morning of the bone scan, the horse is lunged to maximise blood flow around the body. The horse is then injected with Technetium and the scanning process will begin two hours later.

Full body scan (forelimbs, hind limbs, back, pelvis, neck and head if required) will take approximately 3-4 hours. Half body scan (forelimbs or neck and head, hindlimbs, back and pelvis) will take approximately 2-3 hours.

The horse is kept in the isolation stable for the next 48 hours. If required, further radiographs and a lameness investigation will be performed.

The Result

Due to the time involved, injecting the horse, allowing the isotope to bind in the skeleton, and then carrying out the scan, the results are usually not ready until at least 6pm.

Large amounts of data are generated by a bone scan, thus the significance of any findings need to be interpreted carefully. The first results are therefore only provisional, and will depend on further examination and assessment of the horse. It should be anticipated that the final results will take 3 or more days.

The Law

Bone scans involve the use of radiation and are strictly regulated by law. Following injection of the isotope, the horse and the stable are defined as a controlled area and only designate personnel. 48 hours after the injection the horse is no longer in a controlled area as the radiation has decayed (a 6 hour half-life so the radiation is halved 8 times i.e. 1/256th of the initial dose).

Limitation

Bone scans are sensitive for detecting bone conditions. Sometimes a “hotspot” is detected which cannot be confirmed on radiographs, in this case the advice given is based around the bone scan alone. Soft tissue condition has a bone component such as some cases of proximal suspensory desmitis. Many soft tissue injuries are not detected by scintigraphy.