

**BONE SCAN OF EQUINE HEAD**

## Scintigraphy (Bone Scan)

The equine veterinary surgeon investigating causes of poor performance, lameness and back problems has a number of tools available, including thorough clinical examination, local anaesthetic nerve blocks, radiography (x-ray), ultrasound, MRI, CT and bone scanning. A bone scan makes use of low level radiation, injected into the patient, which then concentrates in areas of inflammation within the body. The patient is scanned a couple of hours after injection with a large camera, which detects the radiation being emitted from the body. Where there is inflammation, there is more radiation, so the camera detects a “hot spot”. Bone scanning is most useful for injuries or disease of bones, joints, teeth and some ligament injuries.

### Clinical signs

Bone scanning is a specialised piece of diagnostic equipment and is not available in every equine practice. Your practice may offer bone scanning or they may refer the patient to another clinic for the procedure to be undertaken.

The process involves injecting the patient intravenously with a small quantity of a radio-active substance, combined with another chemical which is particularly attracted to certain inflamed tissues. The two substances accumulate at sites of inflammation and injury within a couple of hours of being injected.

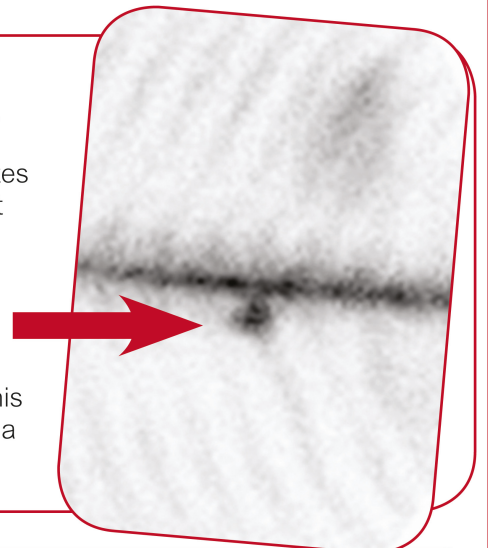
The patient then stands next to the detecting equipment, called a gamma camera, which measures how much radiation is being emitted from each part of the patient's body.

Any part of the body can be scanned. A full body bone scan can take up to three hours to complete, usually involving three people.

After the scan, the patient must remain in isolation for 48 hours until the radiation levels drop to normal.

### The image

The computer generates an image of each part of the body, showing how much radiation is being emitted. Areas of increased activity show up as dark or “hot” spots (arrow). This patient had sustained a fractured rib.



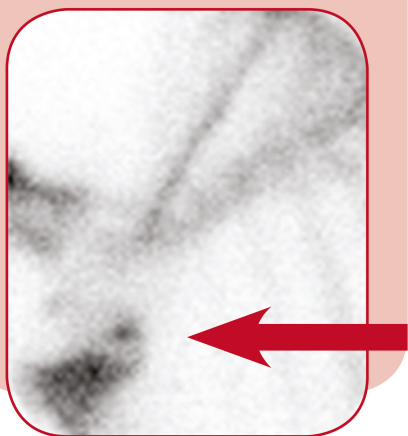
### KEY POINTS

Bone Scanning:

- is most commonly used to investigate poor performance, complex lameness, back and neck pain and certain dental conditions;
- requires the patient to be in isolation for two to three days;
- is a painless and safe procedure for the patient and has no long term side effects;
- is used in combination with x-ray, ultrasound and nerve blocks;
- is a relatively expensive procedure, so is not normally a first-line investigative tool.

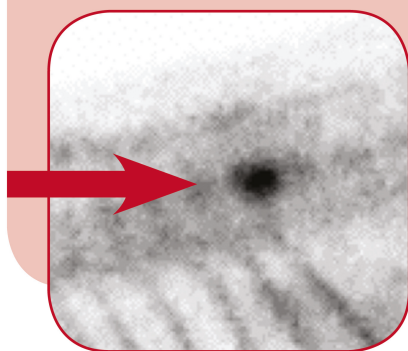
### CASE EXAMPLE 1

This image shows a bone scan image of the left shoulder area of a patient with left forelimb lameness. The dark spot (red arrow) represents an area of increased bone activity in the back of the shoulder joint associated with damage to the surface of the joint in that area.



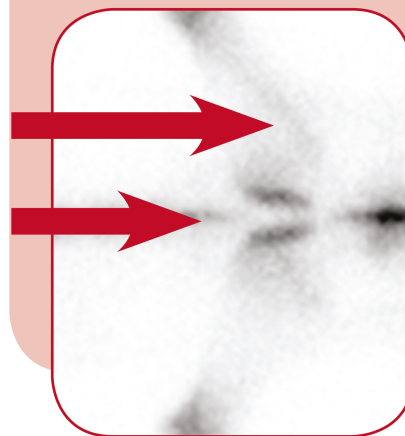
### CASE EXAMPLE 2

This patient with pronounced back pain behind the saddle area had a hot spot (dark area) in the lower back on the bone scan. A diagnosis of degenerative joint disease (arthritis) of one of the joints in the bones of the lower back was made. The affected joint was then injected with anti-inflammatories under ultrasound guidance.



### CASE EXAMPLE 3

This patient was very lame after exercise. Examination did not reveal any significant abnormalities. A bone scan showed two faint dark lines on the pelvis caused by double pelvic stress fractures, a potentially fatal injury.



## The gamma camera

A dedicated, temperature controlled room is needed to carry out a bone scan, along with isolation stables nearby.

The 500kg camera is suspended from an electric hoist or crane, allowing it to be moved around the patient, which can then be scanned from either side, above or even below for images of the feet.



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