

July 2011

NEW SCINTIGRAPHY EQUIPMENT SPECT/CT

ARG is upgrading our facilities with the latest generation scintigraphic imaging equipment. In addition to the state of the art dual head gamma camera the new machine has fully integrated low dose CT scanner. This provides the **combination of accurate anatomical data with the metabolic data from scintigraphy**. The gamma camera can acquire planar (2D) or tomographic/SPECT (3D) images to combine with the CT scan.



ADVANTAGES:

Reduced radiation dose

Scintigraphy has always involved tradeoffs of acquisition time vs radiation dose vs image quality. Improvements in gamma camera hardware and software give the potential for improved scintigraphy imaging at **significantly lower radiation dose, even when a low dose CT is performed** in conjunction with the nuclear medicine study.

A typical bone scan dose is 3-4 mSv. The new camera on this equipment can reduce this to 2 mSv. If low dose CT is required this will add 0.2 – 1 mSv depending on the region scanned. It is possible to avoid the added dose by importing data from a previously performed diagnostic CT or MRI scan if this is available.

Improved image quality

The CT scan provides two major benefits

- the CT scan allows calculation of an attenuation map for the body part examined giving improved SPECT data leading to images with better spatial and contrast resolution
- the detailed anatomical information can be superimposed on the scintigraphic data to provide accurate 2D or 3D localisation of any areas of metabolic abnormality

Patient factors:

- more comfortable table which moves lower for ease of getting on and off
- higher weight limit allows imaging of people up to 200kg

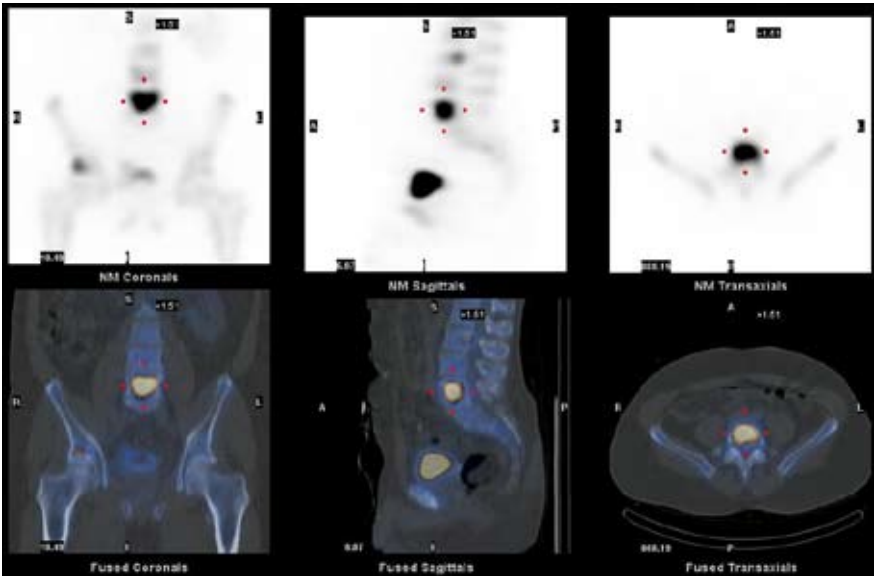


Fig 1. Scintigraphic images of the spine and pelvis in a patient with metastatic breast cancer. The scintigraphic images (top) show increased uptake in the lower spine. The location of the metastasis in L5 vertebral body is clearly shown on the fused CT images in three planes (bottom). The other "hot" area is excreted radiopharmaceutical in the bladder.

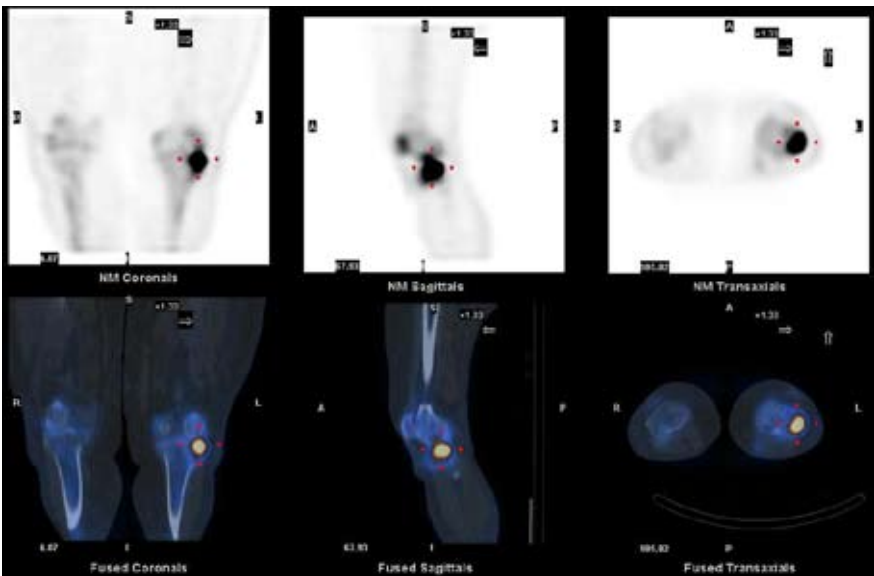


Fig 2. Tibial plateau fracture not clearly visible on xrays. Increased uptake on Scintigraphy (top) and localised to the medial tibial plateau on coronal and sagittal fused CT images (bottom).



Fig 3. Lymphoscintigraphy for sentinel nodes prior to surgery for melanoma on the left arm. 3D reconstructions of fused CT images allow accurate localisation of the sentinel node.

Nicholas Dodd

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