

HIG Nuclear Medicine Physicians: Dr John Booker, Dr Demetrius Voutnis

Condition / Clinical Presentation	Examination to Request
Neurological	
Diagnose Alzheimer's Disease	Neurolite brain perfusion scan
Demonstrate Changes in AIDS Dementia	Neurolite brain perfusion scan
Diagnose Multi-Infarct Dementia	Neurolite brain perfusion scan
Oncological	
Tumor Localisation	Bone scan (primary bone cancer, bony metastases), Gallium scan (lymphoma and some adenocarcinomas), PET scan, Scintimammography (breast cancer)
Tumor Staging	Bone scan (primary bone cancer, prostate, breast, lung, colon, renal and thyroid cancer, melanoma), Gallium scan (lymphoma), PET scan
Identify Metastatic Sites	Bone scan, Gallium scan, PET scan
Judge Response to Therapy	Bone scan, Gallium scan, PET scan
Orthopaedic	
Identify Occult Bone Trauma (Sports injuries)	Bone scan + Spect/CT
Diagnose Osteomyelitis	Bone scan +/-, Gallium scan +/-, Tc-99m labelled white blood cell scan +/- (Leukoscan)
Evaluate Arthritic Changes and Extent	Bone scan
Distinguish between prosthetic joint infection and loosening	Bone scan +/-, Gallium scan +/-, Tc 99m labelled white blood cell scan + Scintigraphic Arthrogram
Detection of stress fractures and shin splints	Bone scan
Detection of occult scaphoid fracture	Bone scan + Spect/CT
Investigate elevated serum ALP	Whole body bone scan
Renal	
Detect Urinary Tract Obstruction	Tc-99m DTPA scan with lasix
Diagnose Renovascular Hypertension	Tc-99m DTPA scan with captopril
Measure Differential Renal Function	Tc-99m DMSA or Tc-99m DTPA
Detect Renal Transplant Rejection	Tc-99m DTPA scan
Detect Pyelonephritis	Tc-99m DMSA
Detect Renal Scars	Tc-99m DMSA
Cardiac	
Diagnose Coronary Artery Disease	Tc-99m sestamibi – MPI
Monitor effectiveness of Bypass Surgery	Tc-99m sestamibi – MPI
Monitor effectiveness of Therapy for Heart Failure	Gated heart pool scan
Select Patients for Bypass or Angioplasty	Tc-99m sestamibi – MPI
Identify Patients at High Risk going to Surgery for Other Reasons	Tc-99m sestamibi – MPI
Identify Right Heart Failure	Gated heart pool scan
Measure Chemotherapy Cardiac Toxicity	Gated heart pool scan
Diagnose and Localise Acute Heart Attacks	Tc-99m sestamibi or Tc-99m pyrophosphate hot spot scan

Condition / Clinical Presentation	Examination to Request
Pulmonary	
Diagnose Pulmonary Emboli	V/Q lung scan
Detect Pulmonary Complications of AIDS	Gallium scan
Quantify Lung Ventilation and Perfusion for lung reduction surgery	V/Q lung scan
Diagnose Sarcoid	Gallium scan
Other	
Diagnose Thyroid disease (Graves' Disease, multi-nodular goitre, thyroiditis, suspicious thyroid nodules)	Tc-99m pertechnetate thyroid scan
Detect Acute or chronic Cholecystitis and biliary dyskinesia	HIDA scan
Detect Acute Gastrointestinal Bleeding	Tc-99m labelled red blood cell scan
Diagnose and Assess inflammatory Bowel Disease	Tc-99m labelled white blood cell scan
Detect Occult Infections (PUO)	Gallium scan
Detect parathyroid adenoma	Parathyroid scan
Investigate Epiphora	Dacrosclintigraphy
Investigate epigastric discomfort and bloating	Gastric Emptying study
Investigate constipation	Colonic Transit scan
Investigate limb swelling/diagnose lymphoedema	Lymphoscintigraphy
Swallowing abnormality Atypical chest pain	Oesophageal Mobility Study
Define live/spleen size. ? Hypersplenism ? Cirrhosis	Liver/Spleen scan

Therapeutic Nuclear Medicine

Condition	Treatment
Hyperthyroidism	
Multinodular goitre	Radionuclide therapy with Iodine - 131
Graves' Disease	Radionuclide therapy with Iodine - 131
Autonomous functioning thyroid nodule	Radionuclide therapy with Iodine - 131
Thyroid Cancer	
Remnant Ablation	Radionuclide therapy with Iodine - 131
Painful Skeletal metastases from prostate cancer	Consultation for palliative therapy with Samarium - 153
Skeletal metastases from breast cancer	Consultation for palliative therapy with Samarium – 153 or Strontium - 89