INTRODUCTION:

Single-photon emission computed tomography (SPECT) is a nuclear medicine imaging technique based on the use of computed tomography to localize data from gamma ray emitting injected radiopharmaceuticals to specific anatomical locations within the patient. The resulting 3D images can be reconstructed in multiple planes. As a general rule, the detection efficiency and spatial resolution improves as the number of detecting cameras comprising the imaging system increases. Radiopharmaceuticals used vary based on the clinical indication. The technique is applied in brain, cardiac, pulmonary, abdominal, endocrine and musculoskeletal imaging.

Due to the improved anatomical detail afforded by CT, MRI and Ultrasound, these techniques have largely replaced radionuclide liver and spleen imaging. Liver and spleen Single-Photon Emission Computed Tomography (SPECT) imaging, depending on the indication, can be undertaken using either the IV injection of sulfur colloid or red blood cells labeled with Tc99M. Sulfur colloid images are created by taking advantage of the reticuloendothelial cells ability to phagocytize the agent. Indications using this agent include the detection of hepatosplenomegaly, hepatocellular disease and certain focal hepatic lesions. Red blood cell scanning is limited to the evaluation of liver hemangiomas. The ability to create 3D multiplanar images with the SPECT technique greatly improves the diagnostic capability over traditional planar imaging.

INDICATIONS FOR A LIVER SPECT SCAN:

- Evaluation of hepatic artery catheter placement.
- Detection of accessory splenic tissue or asplenia AND patient has not had a previous Nuclear Liver or Spleen scan.
- Evaluation of focal nodular hyperplasia.
- Evaluation of patients with suspected liver or spleen rupture or hematoma and an Abdominal CT or MRI is contraindicated AND patient has not had a previous Nuclear Liver or Spleen scan within the past three (3) months.
- Evaluation of size, shape, and position of liver and spleen and an Abdominal CT or MRI is contraindicated AND patient has not had a previous Nuclear Liver or Spleen scan within the past three (3) months.
- Detection of space-occupying lesions: abscesses, cysts, and primary tumors and an Abdominal CT or MRI is contraindicated AND patient has not had a previous Nuclear Liver or Spleen scan within the past three (3) months.
• Evaluation of hepatic metastasis (pre and post-therapy) AND patient has a contraindication to a PET scan or a PET scan is unavailable.

ADDITIONAL INFORMATION RELATED TO A LIVER SPECT SCAN:

Hepatobiliary imaging or HIDA scan: (hepatobiliary iminodiacetic acid) an imaging procedure utilizing the IV administration of Tc99M labeled iminodiacetic acid which is excreted by hepatocytes like bile. Unlike Liver and spleen imaging this technique utilizes a series of standard planar images over time to determine the progression of the radionuclide through the biliary system. HIDA scanning is used to evaluate cystic duct obstruction (cholecystitis), common bile duct obstruction, congenital biliary system anomalies and bile leaks.
REFERENCES


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