

## **LIVER/SPLEEN STUDY (Tc-99m-Sulfur Colloid)**

### **Overview**

- The Liver/Spleen Study demonstrates the distribution of the intravascular mononuclear phagocyte system. The intravascular members of this system are cells that line the sinusoids of the liver (Kupffer cells), spleen, and bone marrow.

### **Indications**

- Assessment of chronic liver disease (1).
- Assessment of liver or spleen size and configuration (2).
- Diagnosis of focal nodular hyperplasia (3-5).
- Detection of accessory splenic tissue.

### **Examination Time**

- 45 minutes.

### **Patient Preparation**

- None.

### **Equipment & Energy Windows**

- Gamma camera: Large field of view, preferably dual head.
- Collimator: Low energy, high resolution, parallel hole.
- Energy window: 20% window centered at 140 keV.

### **Radiopharmaceutical, Dose, & Technique of Administration**

- Radiopharmaceutical: Tc-99m-sulfur colloid (6).
- Dose: 6 mCi (222 MBq).
- Technique of administration: Standard intravenous injection.

## Patient Position & Imaging Field

- Patient position: Supine.
- Imaging field: Upper abdomen to include the liver and spleen.

## Acquisition Protocol

- Wait 5 minutes following injection of the radiopharmaceutical.
- Acquire an approximately 750 K count or 3 minute image, whichever occurs first, in the ANT projection.
- Acquire RAO, R LAT, RPO, POST, LPO, L LAT, & LAO images for the same time as the first ANT image.
- Place a lead maker strip on the right costal margin and acquire a second ANT image for the same time as the first ANT image.

## Protocol Summary Diagram



## Data Processing

- None.

## Optional Maneuvers

- SPECT imaging of the liver and spleen (7-9):
  1. Image acquisition parameters:
    - a) degrees of rotation: 360°.
    - b) number of images: 64.
    - c) time per image: 20 seconds.
  2. Data processing:
    - a) reconstruct transverse, sagittal, and coronal image.
    - b) filter selection depends on computer software package.

**Principle Radiation Emission Data - Tc-99m (10)**

- Physical half-life = 6.01 hour.

<u>Radiation</u>	<u>Mean % per disintegration</u>	<u>Mean energy (keV)</u>
Gamma-2	89.07	140.5

**Dosimetry - Tc-99m-Sulfur Colloid (11,12)**

<u>Organ</u>	<u>rads/6 mCi</u>	<u>mGy/222 MBq</u>
Liver	2.03	20.3
Spleen	1.28	12.8
Bone marrow	0.17	1.7
Total body	0.11	1.1
Ovaries	0.03	0.3
Testes	0.001	0.01