Overview

The Hepatic Hemangioma Study depicts the amount of perfusion (early images) and vascular space (delayed images) within hepatic lesions. Hemangiomas are distinguished by their relatively decreased perfusion and increased vascular volume compared to hepatic parenchyma.

Indications

Diagnosis of hepatic hemangiomas (1-3).

*Exams ordered for indications which are not listed above need to be discussed with the Nuclear Medicine Physician.

Examination Time

1 to 2.5 hours

Patient Instructions / Scheduling

No special patient instructions.

Hepatic blood pool scintigraphy should not be done for 48 hours after an upper GI X-ray or a barium enema. Coordinate with Radiology.

Lab / Image Correlation

Reports and films from outside abdominal CT, MRI, or ultrasound must be requested, to be available when the patient arrives for imaging.

Patient Preparation

Metal objects, urinary bags, tubing, electrodes, etc should be removed from the field of view before imaging.

Equipment & Energy Windows

Camera: Rotating gamma camera. (Two or three-headed gamma camera system is preferred (3).)

Collimator: Low energy, high resolution, parallel hole.
Energy window: 20% window centered at 140 keV.

Computer with SPECT software.

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

Radiopharmaceutical: Tc-99m-red blood cells - ULTRATAG (1-3, 6).

Dose: 30 mCi, IV.

**Patient Position & Imaging Field**

Patient position: Supine.

Imaging field: Upper abdomen, to include entire liver.

Position the camera closest to the lesion in question.

**Acquisition Protocol (1-3)**

Flow and static images:
Flow – 5sec/frame for 80 sec (64x64 matrix and zoom of 1.4) in the position which brings the camera closest to the lesion being studied.

Statics – 500K per image (256x256 matrix and zoom of 1.4) at 5, 10, 20, 30, 40, 50, 60 → SPECT or SPECT/CT to follow.

SPECT or SPECT/CT imaging at 1 hour following injection of the radiopharmaceutical (2,3,7):
1. Image acquisition parameters:
   a) degrees of rotation: 360°.
   b) number of images: 60.
   c) time per image: 30 seconds.
   d) matrix 128x128.

Show the study to the nuclear medicine physician who will determine if additional delayed images are needed (3).

**Data Processing**

Reconstruct SPECT images in the Transverse, Sagittal and Coronal views for viewing on the reading station.

**Principle Radiation Emission Data - Tc-99m (11)**
Physical half-life = 6.01 hours.

<table>
<thead>
<tr>
<th>Radiation</th>
<th>Mean % per disintegration</th>
<th>Mean energy (keV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gamma-2</td>
<td>89.07</td>
<td>140.5</td>
</tr>
</tbody>
</table>

### Dosimetry - Tc-99m-Labeled Red Blood Cells (12)

<table>
<thead>
<tr>
<th>Organ</th>
<th>rads/25 mCi</th>
<th>mGy/925 MBq</th>
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</thead>
<tbody>
<tr>
<td>Heart</td>
<td>2.0</td>
<td>20.0</td>
</tr>
<tr>
<td>Liver</td>
<td>1.8</td>
<td>18.0</td>
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<tr>
<td>Spleen</td>
<td>1.5</td>
<td>15.0</td>
</tr>
<tr>
<td>Lungs</td>
<td>1.4</td>
<td>14.0</td>
</tr>
<tr>
<td>Kidneys</td>
<td>1.4</td>
<td>14.0</td>
</tr>
<tr>
<td>Blood</td>
<td>1.4</td>
<td>14.0</td>
</tr>
<tr>
<td>Red marrow</td>
<td>0.8</td>
<td>8.0</td>
</tr>
<tr>
<td>Whole body</td>
<td>0.4</td>
<td>4.0</td>
</tr>
</tbody>
</table>

### References


Normal Findings

JSM
PROTOCOL\05-4-1
Rev. 7/1/17

Note: This procedure has not yet been reviewed by the Society of Nuclear Medicine, or ACR, procedure guideline development process.