UW Health
University of Wisconsin Hospital and Clinics

Division of Nuclear Medicine Procedure / Protocol

HEPATIC HEMANGIOMA STUDY **CPT CODE: 78216**
UPDATED: APRIL 2011 **78205 Liver SPECT**

Indications: Hepatic hemangioma

Patient Prep: None.

Scheduling: Total time = 1.5 hours (immediately following flow study).

The site of the lesion in question must be known in advance, so the appropriate view can be chosen for the flow study. Therefore, the appropriate CT or US must be available at time of approval of study by NM resident or staff. This study is ideal for hemangiomas if a multi-headed scanner is used with lesions greater than 1.4 cm and not located near portal vessels. If lesion is small or near major vessels suggest MRI as primary imaging modality to confirm hemangioma.

Radiopharmaceutical & Dose: Tc-99m Pertechnetate (TcO4) 20 mCi +/- 20% (16-24 mCi) with Ultratag® RBC kit, adjusted for weight per nomogram or NMIS.
Assure patient they will be receiving their own blood by placing label marked with patient's name on labeling vial.

Preparation of Tc99m Labeled Red Blood Cells Using UltraTag® RBC

1. Collect 1-3 mL of the patient's blood using enough heparin 1000 units/mL to fill the needle hub as an anticoagulant.
2. Transfer the blood to the UltraTag® RBC reaction vial and gently mix to dissolve the lyophilized material. Incubate vial for five minutes.
3. Add the contents of Syringe I and mix by gently inverting four to five times.
4. Add the contents of Syringe II and mix by gently inverting four to five times.
5. Place the vial in a lead shield and add the Tc99m pertechnetate. The Tc99m pertechnetate should be from a recent elution from a generator that has been previously eluted within the last 24 hours.
6. Mix by gently inverting reaction vial four to five times. Allow to react for 20 minutes with occasional mixing.
7. Re-inject the Tc99m-labeled red blood cells. They should be injected within 30 minutes of preparation, or as soon as possible thereafter. Mix gently prior to the withdrawal of the patient dose. Aseptically transfer the entire contents of the vial to a syringe for administration to the patient. Use largest bore needle compatible with patient administration to prevent hemolysis.
8. Typical labeling efficiency is greater than 95%.

Imaging Device: GE INFINIA camera with Hawkeye (CT).

Imaging Procedure: A flow study is performed in the view selected to best display the hepatic lesion (anterior or posterior view as determined from other imaging studies). The flow study is performed acquiring one minute of 1-second images followed by 1-min acquisitions for a total of 20 minutes. Sometimes longer imaging times are required. A SPECT liver study is then obtained with a limited Hawkeye CT of just the liver area.

SPECT – GE INFINIA Camera w/ Hawkeye (CT)

Matrix:	128 X 128
Acquisition:	Contoured, 6°, 30 sec/stop
Filter:	Hanning 0.7-0.8
Uniformity Correction:	None

Display: The flow study is displayed in 5-sec images, then longer 5-min frames; screen cap each. The SPECT images are displayed using the "Volumetrix for Hawkeye Oncology" protocol. The reconstruction filter is set at Hanning 0.7. The filter can be changed by entering customization, selecting the "NM Reconstruction" tab and modifying the 3D post-filter Param 1 value. Screencap the transverse, coronal, and sagittal slices, plus one or more fused data displays per physician.

PACS: All images, including the dynamic images, should be sent to the PACS system. For SPECT/CT, send all transaxial SPECT and CT images.

Interpretation: Hemangiomas are typically initially hypovascular and fill in over time to become hypervascular in the delayed vascular phase. A common differential diagnosis is a solitary hepatoma, which is typically hypervascular in the early angiographic phase. Some hemangiomas do not demonstrate early hypovascularity, but the typical increase overtime is present and diagnostic.

Comments: A Nuclear Medicine staff or resident physician should be consulted to determine if additional views are indicated.

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