

Division of Nuclear Medicine Procedure / Protocol

LIVER SPECT with Flow (Remnant Liver Function)

CPT CODE: 78216 Liver SPECT with vascular flow

Created: July 2016

Indications: Preoperative evaluation of future remnant liver function of donor and postoperative confirmation of remnant.

Patient Prep: None.

Scheduling: 90-minutes patient time.

Radiopharmaceutical

& Dose: 99mTc-Mebrofenin 5 mCi +/- 20% (4-6 mCi) IV, adjusted for weight per nomogram.

Data Acquisition:

1. Imaging Device
 - a. GE Infinia Hawkeye II or III
 - b. LEHR Collimator
2. To manually enter the patient:
 - a. Click the New Study Tab.
 - b. Enter the correct patient information.
3. Click Select Study Protocol tab, then Select USER tab.
4. Select UW Gastrointestinal tab, then select "Liver Function". Click ok.
5. For automatic patient entry:
 - a. Click the Filter tab, then enter UWHC Accession Number and click Query.
 - b. Look for the patient study on the worklist and click Acquire Study; if undefined, click edit protocol and see 2 above.
6. Verify the views and study information are correct before beginning.
7. Imaging Procedure
 - a. A Nuclear Medicine Imaging Specialist will verify two forms of ID (DOB, spelling of name, MRN) and give a description of the exam.
 - b. Both Dynamic and SPECT/CT imaging will be performed unless protocolled otherwise.
 - c. Place extension on the end of the table. Patient is positioned supine feet first with a transmission source underneath the imaging table to assure correct positioning. Correct positioning is with the entire heart included at the top of the field of view and must be located within the x-ray limits of the table so there is no repositioning in between the flow and the SPECT/CT images. Remove the flood source and move the camera heads in as close as possible and begin imaging. The dynamic imaging set is to starting at time of injection. Note: When imaging postoperative review and match preoperative positioning.
 - d. Dynamic Imaging I
 - i. Anterior and Posterior views
 - ii. 10 seconds/frame for 36 frames
 - iii. 128x128 Matrix
 - iv. Zoom x1

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- e. SPECT/CT Imaging
 - i. Immediately post dynamic images
 - ii. Position: Feet First Supine
 - iii. Mode: H
 - iv. ✓ Use Body Contour
 - v. ✓ Acquire CT/AC
 - vi. CT/AC Range: Partial
 - vii. Start angle of 0°
 - viii. 128x128 Matrix
 - ix. Step and Shoot: 8 seconds/projection
 - x. 60 projections
- f. Dynamic Imaging II
 - i. Anterior and Posterior views
 - ii. 60 seconds/frame for 15 frames
 - iii. 128x128 Matrix
 - iv. Zoom x1

Display/Processing:

SPECT/CT:

Infinia II & III/Xeleris 3.x (Rm A & C)
1) Select the patient and the following files:
a) tomohwky
b) CT tomohwky
c) ATT map tomo
2) Open in Volumetrix for Hawkeye and click Original
a) If no motion correction needed click Proceed.
b) If motion correction is needed click on motion correction button and correct motion. Click proceed when complete.
3) Open in Volumetrix for Hawkeye.
4) Click File and Save MIP; Change name to 'Liver MIP'.
5) Click File then Save & Exit.
6) Select CT tomohwky.
7) Run Convert CT to Hounsfield Units processing icon.
8) Click File and Exit; application converts images automatically.

PACS:

Send raw dynamic images data sets to PACS. For SPECT/CT images: Liver MIP, transaxial attenuation corrected SPECT data and corrected CT (Hounsfield Units) data sets to PACS.

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Interpretation:

General liver hepatocyte uptake should be commented on, as well as if the gallbladder is seen and when, and when excretion has occurred into the small bowel. Abnormalities present as photopenic areas should be commented on, regardless of etiology (tumor, abscess, infarct, cyst, trauma, etc.). Bile leaks (extravasation) can be identified after surgery, and will be seen as an increasing area of activity that does not clear with delayed images.

The SPECT/CT images add the ability to further identify the location of a possible leak, and also evaluate the function of the various liver segments, especially when compared to a diagnostic CT or MRI exam.

Comments:

A Nuclear Medicine staff or resident physician should be consulted to determine if additional views are indicated. Before the patient leaves, a Nuclear Medicine staff or resident physician should check scans to determine if format size needs to be changed.

References:

Tc-99m-Mebrofenin Hepatobiliary Scintigraphy with SPECT for Assessment of Hepatic Function and Liver Functional Volume Before Partial Hepatectomy, Journal of Nuclear Medicine February 2010

Reviewed By:

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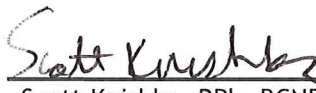
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