

HEPATIC ARTERIAL PERFUSION SCINTIGRAPHY
UPDATED: MAY 2010

CPT CODE: 78202

Indications: Patients with hepatic artery catheters for treatment of hepatic metastases.

Patient Prep: None.

Scheduling: Nuclear Medicine physician experienced in injecting the hepatic arterial perfusion device should provide a suitable time for him/her to inject the patient. Allow 90 minutes of imaging time.

NOTE: Prior to starting the procedure, it is helpful to have the pager number of the oncology nurse who frequently accesses these pumps, in case they are needed to help with needle placement.

Radiopharmaceutical

& Dose: Tc-99m macroaggregated Albumin (MAA) 4 mCi +/- 20% (3.2-4.8 mCi). MAA must be recently prepared (within 2 hrs preferred, 4 hrs max) and have little free pertechnetate (i.e. 98% or greater purity). Volume of MAA should be 1 ml. Do not adjust for weight.

Imaging Device: Large field of view gamma camera with LEHR collimator.

Imaging Procedure: The injection is made into the direct port of the implanted infusion pump. A "Special Arrow Drug delivery system bolus needles" by Arrow International is required with the latest devices. The injection will be made by the Nuclear Medicine physicians using the following procedure:

1. Use Chloraprep swabs and sterile technique.
2. Eye protection should be used.
3. Use Special Bolus needle.
4. Prime the needle and tubing with normal saline and clamp.
5. If patient requires use of lidocaine, but generally this is not necessary.
6. Insert needle and flush with a small amount of saline.
7. Inject the MAA followed by 10 ml of normal saline slowly over 30 sec, so the needle is not dislodged from the correct position.
8. Flush with 5 ml of 100 unit/ml of heparin.
9. Remove needle.

Imaging should include flow and static images to assess perfusion of the liver, extra hepatic perfusion (e.g. stomach or bowel) and arteriovenous shunting (lung visualization).

The camera flow (120 one-sec frames, should start before injections. Three(3)-min images of LAO, anterior, RAO, right lateral and posterior liver views should next be obtained (once tracer has been flushed from port and hepatic arterial catheter). Anterior and posterior images should now be obtained of liver and lung and if pulmonary activity is present the percent shunt, pulmonary activity over total pulmonary and hepatic activity, expressed as percent.

If there is too much scatter from the liver into the lung region, the sum of L lung (anterior & posterior views) can be placed over the arithmetic mean of total liver and lung counts as denominator. This will also be expressed as percent.

Display: A single save set can display 10-second flow images. The five 3-minute views appropriately labeled and the lung views together with percent shunt if present can be on a second save set.

Interpretation:

The hepatic arterial perfusion (HAP) scan should demonstrate only the liver. The liver metastases should have hyper-perfused rims and more perfusion overall than normal liver. Photogenic defects may also be present. If extrahepatic sites (typically stomach) are visualized, this indicates catheter misplacement. The HAP allows concentrated chemotherapy to be delivered without the expected normal systemic effects. The chemotherapy can cause bowel complications. The lung visualization indicates A-V shunting, and therefore systemic distribution of chemotherapy (a quarter of all treated patients).

PACS:

All images should be sent to the PACS system.

Comments:

Note: The **Special Bolus Needle** is stocked in Nuclear Pharmacy.

Formula:

Ant. Lungs + Post. lungs

Ant. (lung + liver) + Post. (lung + liver)

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