

TUMOR SCAN WITH PENTETREOTIDE (OCTREOSCAN®)  
UPDATED: MARCH 2011

CPT CODE: 78800 (LTD), 78801 (multiple),  
78802 (WB), 78803 (SPECT)

### Indications:

Indium-111 pentetretotide is a [IN-111 DTPA-D-Phe] conjugate of octreotide, a somatostatin analog that binds to somatostatin receptors. This octapeptide concentrates in neuroendocrine and some non-neuroendocrine tumors containing somatostatin receptors.

#### GENERAL INDICATIONS

- Adrenal medullary tumors (pheochromocytoma, neuroblastoma, ganglioneuroma)
- GEP (gastroenteropancreatic) tumors, e.g. gastrinoma, insulinoma, glucagonoma, VIPoma (vasoactive intestinal polypeptide secreting tumor), and non-functioning GEP tumors
- Carcinoid tumors
- Medullary thyroid carcinoma
- Pituitary adenomas
- Paraganglioma

#### COMMON INDICATIONS

- Detection and localization of a variety of suspected neuroendocrine and some non-neuroendocrine tumors and their metastases
- Staging patients with neuroendocrine tumors
- Determination of somatostatin-receptor status (patients with somatostatin receptor-positive tumors may be more likely to respond to octreotide therapy)
- Follow-up of patients with known disease to evaluate potential recurrence
- Selection of patients with metastatic tumors for peptide receptor radionuclide therapy (PRRT) and prediction of the effect of PRRT, where available.

### Patient Prep:

To better visualize the abdomen, patient should be instructed to start a clear liquid diet the day of injection and continue until imaging is completed at 24 hours. The use of laxatives should be considered, especially when the abdomen is the area of interest. The need for bowel preparation should be assessed on an individual basis and laxatives should not be used in patients with active diarrhea. Consult the NM physician with any concerns. Please give the patient the instructions for the clear liquid diet at the time of injection. See attached.

### Precautions:

- Insulinoma Patients: OctreoScan® may produce severe hypoglycemia in patients with insulinoma. An IV solution containing glucose should be administered just before and during OctreoScan® administration in these patients.
- Concurrent Octreotide Therapy: Sensitivity of OctreoScan® imaging is reduced in patients receiving therapeutic doses of Octreotide acetate. Octreotide therapy must be discontinued 72 hours before administration.

### Scheduling:

The GE INFINIA Room E and A scanners are the preferred imaging device using medium energy collimators. Whole body acquisition can be acquired on the Philips IRIX system (Room D), if needed.

Notify the radiopharmacy to special order the OctreoScan®. Schedule the patient at 4 hours for a quick whole body survey and a possible SPECT/CT of the area of interest. (This 4 hour image is to evaluate for bowel uptake vs excretion, which could make the delayed images difficult to

interpret). At 24 hours post injection, a whole body scan and SPECT/CT images of the area of interest acquired again. Please check with NM staff physician for what area.

The standard protocol is to image at 24 hours, because the activity in positive lesions increases over time.

#### **Radiopharmaceutical and Dose:**

In-111 OctreoScan® can be ordered as a kit from Covidien to arrive the next day. OctreoScan® is ordered as a package containing both the cold Octreotide and a vial of In-111 Chloride. The dose may also be ordered in unit dose form from the local radiopharmacy. As such, standard adult dose is up to 6 mCi ± 20% (4.8-7.2 mCi). Doses will be adjusted for patients per the nomogram/NMIS. In-111 pentetretotide should not be injected into IV lines for, or together, with solutions for total parenteral nutrition.

#### **Data Acquisition:**

Obtain whole body images and SPECT/CT using MEGP collimation. INFINIA Room E and A are the preferred devices. Use predefined SPECT/CT protocol for both 4 and 24 hour imaging. IRIX may be used for whole body imaging, but check with physician prior to scan.

#### **WHOLE BODY ACQUISITION:**

- Use 4 min/view for whole body imaging at 4 hours.
- Use 7 min/view for whole body imaging at 24 hours.
- Patient should void before imaging.

#### **SPECT & CT ACQUISITION:**

1. 128 x 128 matrix
2. 40 sec/stop; view angle = 5 for 72 total views over 360 degrees
3. Consult NM physician for the area to CT (full FOV or partial)
4. For reconstruction parameters, please refer to the protocol, Tumor SPECT Processing, in the tumor detection section

Additional SPECT/CT imaging may be needed at 24 hours if there is concern over disease vs normal gallbladder, etc., or if there are questionable lesions seen on the 24 whole body scan. Consult with NM staff or resident physician.

#### **Interpretation:**

Normal physiologic uptake is seen in the pituitary, thyroid, spleen, liver, and renal parenchyma. The gallbladder, bowel, renal collecting systems, ureters, and urinary bladder are seen as a result of clearance of In-111 pentetretotide. Bowel activity can be present (may be reduced with laxative use), especially on the later images, but rarely at 4 hours.

This scan is very sensitive (60%) in carcinoids and gastrinomas. Other diseases this radiopharmaceutical is useful with include small cell cancer of the lung where metastases are well seen and neuroblastomas (but MIBG preferred).

#### **PACS:**

Send raw transaxial SPECT and CT images to PACS, as well as all saved sets and MIP image sets.

#### **Bibliography:**

1. SNM procedure guideline for Somatostatin receptor scintigraphy with In-111 Pentetretotide. Balon HR, Goldsmith SJ, Siegel BA, et al. SNM Procedure Guidelines Manual, June 2002;147-51.

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**BOWEL PREP FOR OCTREOSCAN**  
**How to Prepare for your Imaging Procedure in Nuclear Medicine**

**\*\*\*\* IF PATIENT HAS CHRONIC DIARRHEA, OR IS AT PRESENT HAVING A BOUT OF  
DIARRHEA, PLEASE CONSULT WITH PHYSICIAN \*\*\*\***

**\*\*\*\* CONSULT PHYSICIAN, IF PATIENT IS UNDER 18 \*\*\*\***

**Clear Liquid Diet**

To clean out your bowel, you will need to follow a clear liquid diet. A clear liquid diet include any of the liquids below:

- √ Clear broth
- √ Coffee or tea (no cream, sugar is OK)
- √ Clear Jello (do not add fresh or canned fruit)
- √ Clear fruit juices of drinks – cranberry, grape or apple
- √ Carbonated beverages such as ginger ale, Seven-Up®, Sprite®, NO colas

**DO NOT DRINK:** *cola, milk, orange juice, or tomato juice*