UNM HOSPITALS

F-18 Fluciclovine (Axumin) PET-CT

Clinical Indications:
F-18 Fluciclovine is indicated for positron emission tomography (PET) imaging in male patients with suspected prostate cancer recurrence based on elevated prostate specific antigen (PSA) levels following prior treatment.

*** Eligibility criteria:**
1) PSA > 1
2) Prior prostatectomy or prostate radiation
3) Negative bone scan within 1 year

Hypersensitivity Reactions:
Hypersensitivity reactions including anaphylaxis may occur in patients who receive Axumin. Emergency resuscitation equipment and personnel should be immediately available.

Adverse Reactions:
Adverse reactions were reported in ≤1% of subjects during clinical studies with Axumin. The most common adverse reactions were injection site pain, injection site erythema and dysgeusia.

To be done at UNMH and OSIS only.

Radiopharmaceutical: F-18 Fluciclovine (Axumin)

Dose (Adult/Pediatric): Refer to Nuclear Medicine Dose Chart

Route of Administration: F-18 Fluciclovine is given intravenously in a maximum recommended volume of 5 mL, using 0.9% sodium chloride for volume adjustment. Instruct the patient to remain in a quiet state, resting comfortably, during the uptake phase (between administration of the radiopharmaceutical and imaging).

Patient Preparation: Nothing to eat or drink 4 hours before the test except water with medications

No strenuous activity for 24 hours before the test (i.e. exercise, yard work, and any repetitive motion

Patient should ask primary care physician for medication if claustrophobic prior to arriving for scan.

Patients should be encouraged to void before starting the scanning procedure.

All metal must be removed from the patient prior to scanning, including (but not limited to) glasses, bras, dentures, earrings, rings, and watches if arms are left down.

Equipment Setup: Time per bed position (minutes):

PET-CT (continued)

Scan from bottom of pelvis to skull base, 5 min/bed first 3 beds, 3 minutes thereafter.

PET-CT protocol:

Regions to be imaged: bottom of pelvis to skull base.

IV and oral contrast: No IV or oral contrast.

Patient Positioning: Supine, head first with arms up over head. A wedge can be placed under the patient's knees for comfort.

Ensure the patient is instructed to hold very still, no talking, do not move the head and no swallowing during the scan)

Procedure:

1. Position patient supine on scanner table and check before start of exam if patient can tolerate arms above head. Ensure maximal comfort for the patient. If patient cannot tolerate this position for the duration of the study, a different arm position may be chosen.
2. Have patient place arms at side for injection. Have stopwatch ready. Inject fluciclovine as intravenous bolus and flush with at least 10 mL of 0.9% sodium chloride solution. Injection into the right arm is preferred as stasis in the left axillary vein may be misinterpreted as a metastatic lymph node (Vichow's node)
3. At the time of injection, start stopwatch.
4. After completing the injection and starting stopwatch, ask the patient to raise the arms above the head, to be placed in same in the same position for CT and PET.
5. Obtain topogram to define the region to be scanned by CT and PET.
6. Start CT scan with scanning in the craniocaudal direction. To diminish breathing artifacts, patient is instructed to perform quiet tidal breathing while scanning through the diaphragm.
7. At 3 minutes on stopwatch (acceptable range of 3-5 minutes), start PET emission scan, with scanning in the caudocranial direction (from below ischium to skull base).
8. After completion of the scan, the patient should be removed from the scanner and encouraged to void before leaving the PET facility. The patient should be encouraged to drink plenty of fluids and void frequently throughout the day.

Note that in case of specific workflow and equipment challenges with a single technologist present, it would also be possible to acquire the CT first, and then inject fluciclovine and proceed to emission acquisition, but this would have greater risk of misregistration between CT and PET as the arm would have to be moved after CT for injection of fluciclovine.

Acquisition:

1. On chronicle, enter PET dose, time administered, and time per bed

position.

2. Load topogram
3. Set parameters for scan
4. Load → move → start
5. When CT is complete (approximately 25 secs), you will be prompted to move patient for PET scan (table moves all the way to the back of the gantry)
6. Options → PET monitor to view scan length if desired (applies to UNMH PET only; displays how long the entire PET scan will take).
7. When acquisition is complete, load fusion on Wizard before sending to PACS and Leonardos

Processing:

Follow automatic processing workflow

Process CT in B 5 31 algorithm

Process PET into attenuation corrected and non-attenuation corrected PET files

Generate PET-CT fused axial data set

Use "Microdelta Hot Metal" color scheme

Items Required For Complete Study:

- Enter protocol, protocoling physician, F-18 Fluciclovine, and injection site in comments section on PACS
- Processing and transfer of all images to PACS and/or Leonardo as appropriate
  - Topogram (to PACS)
  - Fused axial images (to PACS)
  - CT, PET Corrected, and PET Uncorrected to PACS and Leonardo.
- Complete the examination in RIS

References:

1. https://www.accessdata.fda.gov/drugsatfda_docs/label/2016/208054s000lbl.pdf

2. ACR–ACNM Practice Parameter for The Performance of Fluorine-18 Fluciclovine PET/CT For Recurrent Prostate Cancer 2018: https://www.acr.org/-/media/ACR/Files/Practice-Parameters/PET-CT-ProstateCancer.pdf?la=en