Amyloid PET Imaging

INDICATION:
- Amyloid imaging radiopharmaceuticals are indicated for Positron Emission Tomography (PET) imaging of the brain to estimate β-amyloid neuritic plaque density in adult patients with cognitive impairment who are being evaluated for Alzheimer’s disease (AD) and other causes of cognitive decline.

RADIOPHARMACEUTICALS (FDA APPROVED):
- 18F-Florbetapir (Amyvid™, Eli Lilly)
- 18F-Florbetaben (NeuraCeq™, Piramal Life Sciences)
- 18F-Flutemetamol (Vizamyl™, GE Healthcare)

CONTRAINDICATIONS:
- Inability to cooperate with PET brain imaging.
- Amyloid PET imaging should be performed on a pregnant woman only if there is a clear clinical benefit.
- Previous reaction to the radiopharmaceutical or any excipient.

ADVERSE REACTIONS (SEE INDIVIDUAL PACKAGE INSERT FOR COMPLETE LISTINGS):
- 18F-Florbetapir (Amyvid™) - headache (<2%), dizziness, nausea (<1%), fatigue (<1%), injection site reaction (<1%).
- 18F-Florbetaben (NeuraCeq™) - injection site reactions (<2%) consisting of erythema, irritation and pain.
- 18F-Flutemetamol (Vizamyl™) - flushing (2%), blood pressure increase (2%), headache (1%), nausea (1%), dizziness (1%)

STORAGE:
- Store radiopharmaceutical at room temperature.
- Radiopharmaceutical is provided in unit dose syringe and must not be diluted.

PATIENT PREPARATION:
- It is not necessary for patients to be NPO prior to imaging.
- It is not necessary to control the post injection conditions (e.g. ambient light, temperature, noise).
- It is not necessary to discontinue any medications.
- Patient should wear comfortable clothing, with no metal on head (hair clips, earrings, etc.)
- If patient is breast feeding, recommend discontinuation of breast feeding for 24 hours after administration of radiopharmaceutical.
- It is often useful to engage a family member or caregiver in the process of explaining the scan procedure and assessing the patient’s ability to follow instructions.
- Screen patient for claustrophobia and ability to hold still for imaging. Arrange for sedation as required.

DOSE AND ADMINISTRATION:
- Inspect the radiopharmaceutical dose solution prior to administration and do not use it if it contains particulate.
- Inject through short tubing (ideally ≤ 8") in order to minimize adsorption to tubing

<table>
<thead>
<tr>
<th>Radiopharmaceutical</th>
<th>Dose</th>
<th>Volume</th>
<th>Injection</th>
<th>Uptake Period</th>
<th>Acquisition length</th>
</tr>
</thead>
<tbody>
<tr>
<td>18F-Florbetapir (Amyvid™)</td>
<td>10mCi</td>
<td>≤10cc</td>
<td>bolus</td>
<td>30-50 minutes</td>
<td>10 minutes</td>
</tr>
<tr>
<td>18F-Florbetaben (NeuraCeq™)</td>
<td>8.1mCi</td>
<td>≤10cc</td>
<td>Slow bolus (6sec/ml)</td>
<td>45-130 minutes</td>
<td>15-20 minutes</td>
</tr>
<tr>
<td>18F-Flutemetamol (Vizamyl™)</td>
<td>5mCi</td>
<td>≤10cc</td>
<td>Bolus (infused within 40sec)</td>
<td>60-120 minutes</td>
<td>10-20 minutes</td>
</tr>
</tbody>
</table>

IMAGING PARAMETERS:
- 3D imaging
- Patient supine with the head positioned to center the brain, if possible, with cantho-meatal line perpendicular to the floor.
- Include cerebellum in the PET scanner field of view.
- Reduce head movement with tape or other flexible head restraints.
PROCESSING PARAMETERS:

- Reconstruction should include attenuation correction with resulting transaxial, with pixel sizes between 2 and 3 mm.
- Refer to package insert and radiopharmaceutical manufacturer’s instructions for camera-specific processing recommendations.

DISPLAY PARAMETERS:

<table>
<thead>
<tr>
<th>Radiopharmaceutical</th>
<th>Display</th>
</tr>
</thead>
<tbody>
<tr>
<td>18F-Florbetapir (Amyvid™)</td>
<td>Inverse gray scale (black on white)</td>
</tr>
<tr>
<td>18F-Florbetaben (NeuraCeq™)</td>
<td>Gray scale (white on black)</td>
</tr>
<tr>
<td>18F-Flutemetamol (Vizamyl™)</td>
<td>Rainbow or Sokoloff color scale</td>
</tr>
</tbody>
</table>

PATIENT INSTRUCTION:

- Advise patient to hydrate and void after procedure to reduce radiation exposure if possible.