

Application of PET/CT to Dementia

Why Use PET/CT?

PET/CT is the most accurate test for differentiating between Alzheimer's disease (AD), fronto-temporal dementia, multiple-infarct-dementia and normal aging in early stage patients. This is because PET/CT can detect reductions in neuronal activity well before the cognitive reserve is exhausted and well before this reduction is reflected by changes in anatomy.

By using PET/CT early, patients with AD can be put on cholinesterase inhibitors early, which can significantly reduce the rate of progression; while patients with other forms of dementia can be moved on to more appropriate therapies.

When PET/CT was added to the workup of patients with possible AD, sensitivity went from 84% to 94% while specificity went from 52% to 75% with an overall improvement in accuracy from 69% to 85% (Silverman, DH., 2001).

In patients satisfying the criteria below, PET/CT is reimbursed by Medicare.

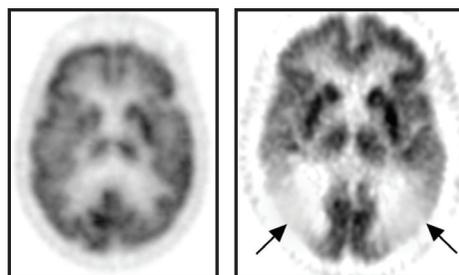
When to Use PET/CT?

Use FDG-PET/CT for patients that:

- Have a formally documented cognitive decline of at least 6 months.
- Have had a comprehensive clinical evaluation including: 1) medical history from the patient and a well-acquainted informant, 2) physical and mental status examination aided by cognitive scales or neuropsychological testing, 3) laboratory tests (B12, thyroid hormone).
- Meet diagnostic criteria for both Alzheimer's disease and fronto-temporal dementia.
- Have had structural imaging such as magnetic resonance imaging (MRI) or computed tomography (CT).
- The specific neurodegenerative disease or other cause for the clinical symptoms remains uncertain.
- Have not had a single photon emission computed tomography (SPECT) or FDG-PET scan of the brain for this indication within the past year.

PET Images

Bilateral hypometabolism in the temporal parietal regions is indicative of early AD. Both of these brains would look normal on CT or MRI.



Normal

Alzheimer's Disease



The Brooklyn Hospital Center

Keeping Brooklyn healthy.

121 DeKalb Avenue • Brooklyn, NY 11201
718.250.8000 • www.tbh.org