

UCLA offers brain PET expertise in convenient Westlake Village location



UCLA Nuclear Medicine is now offering a NeuroPET clinic in Westlake Village. The service brings UCLA experts to an office serving the West San Fernando and Conejo Valleys. Brain PET can often provide a level of diagnostic certainty that is not possible with other imaging technologies, and with a longer record of clinical experience in brain PET than any other institution, UCLA provides PET image acquisition and interpretation of the highest quality.

PET (positron emission tomography) reveals brain activity by tracing the metabolism of 18F-fluorodeoxyglucose (FDG), a form of glucose with a radioactive attachment that makes it visible to the PET scanner. The scan produces a series of virtual slices through the brain from top to bottom, showing the location and extent of FDG metabolism throughout the brain.

NeuroPET for cognitive dysfunction

One of the principal uses of brain PET at UCLA is in the differential diagnosis of cognitive impairment. Particularly among the geriatric population, Alzheimer's disease is a relatively common cause of cognitive impairment, but a number of other neurological conditions can produce similar symptoms. Accurately diagnosing the cause of cognitive impairment enables physicians to begin appropriate therapy and avoid unnecessary medical treatment.

Revealing the source of cognitive impairment

“Even when following diagnostic guidelines — including a thorough history, physical and neurological exams, laboratory analysis, neuropsychological testing and MRI — in the absence of molecular imaging of the brain, a clinical dementia expert diagnoses Alzheimer's disease with only 60 to 70 percent accuracy,” states Dan Silverman, MD, PhD, director of UCLA's NeuroPET clinics. “When you add PET to that, the accuracy overall increases to 90 percent.”

Brain PET provides information on brain activity by tracking the metabolism of the radioactive glucose analog FDG. By comparing the activity in hundreds of brain regions with normal standards, UCLA doctors can distinguish among a number of conditions that produce similar symptoms of cognitive dysfunction.

“When a patient being evaluated for dementia is negative for that disorder on their PET scan, we can say with 95 percent confidence that the patient's cognitive symptoms are not caused by Alzheimer's,” explains Dr. Silverman. “And by the pattern shown on the PET, there's a good chance we'll be able to tell what the underlying cause of the dysfunction is.”

When used along with other elements of a thorough neurological examination, FDG PET can provide an accurate clinical diagnosis in over 90 percent of Alzheimer's disease cases. The UCLA NeuroPET clinic is also capable of performing amyloid imaging PET scans. This type of scan uses a radioactive tracer that binds to amyloid proteins and can produce high-quality images of the brain plaques characteristic of Alzheimer's disease.

A key strength of brain PET is its ability to distinguish patterns of brain metabolism particular to different neurological conditions. For example, "chemobrain" — also known as chemo fog — is a term used by cancer survivors to describe cognitive deficits they experience after cancer treatment. PET can show changes in brain metabolism in cognitive dysfunction patients who have been exposed to cancer therapies. In older patients who have had chemotherapy for cancer and are having problems with thinking clearly, attention or recent memory, a brain PET scan is the most accurate way to rule out Alzheimer's disease as the cause.

Brain tumors and other brain PET indications

NeuroPET is also frequently used to determine if previously treated brain tumors are recurring. CT (computed tomography) and MRI (magnetic resonance imaging) can produce ambiguous images in these cases, as tissue damage from prior tumor treatment can be difficult to distinguish from new tumor growth. The FDG metabolic activity revealed by brain PET enables physicians to make that distinction more accurately, helping some patients get the treatments they need sooner, while preventing others from being subjected to unnecessary procedures.

PET is also often used for patients with epilepsy that is not successfully controlled by medication. Patients who are considering epilepsy surgery can undergo PET imaging to identify whether they would be appropriate candidates for having their seizures eliminated by such surgery.

UCLA NeuroPET

In establishing the NeuroPET Clinic in Westlake Village, UCLA Nuclear Medicine is expanding the longest-running and most experienced PET service in the Western United States. UCLA has extensive experience in acquiring PET images, and is able to optimize its technique to get the best possible scan for each patient. Because they interpret such a high volume of scans, UCLA physicians are able to extract more information from each scan. In terms of dementia, UCLA Nuclear Medicine physicians have seen scans of more patients whose diagnosis has been confirmed by brain tissue studies than those at any other center.

Dan Silverman, MD, PhD, director of UCLA's NeuroPET clinical service, is the co-inventor of the nation's leading software for regional analysis of brain PET scans. The software, which is used in evaluating every scan obtained at the NeuroPET Clinic, automatically quantifies the amount of metabolic activity in hundreds of brain areas and compares those results to normal levels. Dr. Silverman also offers the nation's only two-day course dedicated exclusively to teaching radiologists and nuclear medicine physicians how to acquire and interpret brain PET.

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