

PET tracer changes management plan for brain tumor patients

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Imaging amino acid transporters with positron emission tomography/computed tomography (PET/CT) has been shown to significantly alter intended management plans for patients with brain tumors, according to research in the March issue of *The Journal of Nuclear Medicine*. As a result of imaging with the radiopharmaceutical 3,4-dihydroxy-6-F-18-fluoro-L-phenylalanine (F-18-DOPA), physicians changed the intended management plan for 41 percent of patients with brain tumors.

Contrast-enhanced [magnetic resonance imaging](#) (MRI) is most frequently used to diagnose and monitor [patients](#) with [brain tumors](#). After initial treatment, however, the assessment of recurrence by MRI can be difficult since contrast enhancement cannot reliably distinguish [tumor recurrence](#) from radiation necrosis. PET/CT imaging provides a highly accurate image that is beneficial for detecting primary and recurrent high- and low-grade brain tumors.

In the study, "Impact of 3,4-Dihydroxy-6-F-18-Fluoro-L-Phenylalanine PET/CT on Managing Patients with Brain Tumors: The Referring Physician's Perspective," referring physicians were given a survey prior to performing PET/CT scans with F-18-DOPA on patients with known or suspected brain tumors. The pre-scan surveys asked about indication, tumor histology or grade, level of suspicion for tumor recurrence and planned management. Soon after the PET/CT scans, the referring physicians were asked to complete a survey to categorize PET findings, level of suspicion for primary or recurrent brain tumors and intended management changes. Six months following the scans, the physicians took another survey dealing with recurrence and survival.

Of the 58 cases that were included in the survey, the clinical suspicion for recurrence increased in 33 percent, remained unchanged in 50 percent and decreased in 17 percent of patients after adding

the PET/CT findings to other diagnostic data. As a result, several changes in management were recommended, with changes from "watch and wait" to chemotherapy (25 percent) and from chemotherapy to "watch and wait" (17 percent) occurring most frequently. Seventy-five percent of the recommended changes were implemented.

"We know that F-DOPA PET/[CT imaging](#) is highly accurate for detecting brain tumors, and in our research we've shown that this imaging modality has a significant impact on patient management," said Johannes Czernin, MD, one of the authors of the study. "In the future, we will initiate multicenter trials to determine whether these management changes have an impact on patient outcome. We believe that amino-acid transport imaging with PET will eventually be an important and frequently used imaging modality in brain cancer."

According to the American Brain Tumor Association, an estimated 64,530 new cases of primary brain tumors were expected to be diagnosed last year. It is estimated that during the year 2004 more than 612,000 people in the United States were living with the diagnosis of a primary brain or central nervous system tumor. The five year survival rates vary among tumor subtypes and range from 3.3 percent for high-grade tumors to 70 percent for low-grade tumors.

More information: "Impact of 3,4-Dihydroxy-6-F-18-Fluoro-L-Phenylalanine PET/CT on Managing Patients with Brain Tumors: The Referring Physician's Perspective" *Journal of Nuclear Medicine* (2012).

Provided by Society of Nuclear Medicine

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