Early PET response to neoadjuvant chemo predicts increased survival in sarcoma patients

April 2 2012

An early Positron Emission Tomography (PET) response after the initial cycle of neoadjuvant chemotherapy can be used to predict increased survival in patients with soft tissue sarcomas, according to a study by researchers with UCLA's Jonsson Comprehensive Cancer Center.

Prior studies by this multidisciplinary team of physician scientists at the Jonsson Cancer Center had shown that use of FDG PET/computed tomography (CT) could determine pathologic response after the first dose of chemotherapy drugs. The researchers then wondered if the patients showing a significant PET response after the first round of chemotherapy also were surviving longer, said Dr. Fritz Eilber, an associate professor of surgical oncology, director of the Sarcoma Program at UCLA's Jonsson Cancer Center and senior author of the study.

"We did find that patients who experienced an early PET response to treatment had significantly increased survival," Eilber said. "This is vital because patients want to know if the drugs are working and what that says about their ultimate outcome."

The study was published April 1, 2012 in Clinical Cancer Research, a peer-reviewed journal of the American Association of Cancer Research.

In this study, 39 patients with soft tissue sarcoma underwent a PET scan

to measure their tumor's metabolism, or how much glucose was being taken up by the tumor, prior to getting chemotherapy. The patients were given another PET scan after the first round of chemotherapy. Those whose tumors demonstrated a 25 percent or more decrease in metabolic activity – a response considered significant - were determined later to have significant increased survival rates compared to those patients who had less than a 25 percent decrease, Eilber said.

"It's an important finding because we can now identify whether patients are getting the right chemotherapy very quickly," Eilber said. "Patients don't want to have to wait until the cancer recurs or they die to find out whether their chemotherapy worked or not."

Going forward, Eilber and his team are working to design new molecular imaging tools that may tell them even more about a patient's cancer beyond the conventional FDG probe.

"Just looking at the size of the tumor is not good enough anymore," Eilber said. "We want to image what's happening within the tumor in real time."

The study was funded by the In vivo Cellular and Molecular Imaging Center at UCLA's Jonsson Comprehensive Cancer Center and the Department of Energy.

"This study suggests that PET allows survival predictions after the initial cycle of neoadjuvant chemotherapy and might therefore potentially serve as an early endpoint biomarker," the study states. "Such information cannot be derived from CT scanning based on serial tumor size measurements. The ability to assess treatment response early during the course of therapy can potentially guide management decisions. Treatment could be switched from neoadjuvant chemotherapy to immediate surgery in non-responding patients, while it would be

continued in responders. Such risk adapted therapy could reduce treatment associated morbidity and costs."

Provided by University of California - Los Angeles