

PET/CT bests gold standard bone marrow biopsy for diagnosis and prognosis of lymphoma patients

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A more precise method for determining bone marrow involvement in patients with diffuse large B-cell lymphoma (DLBCL)—a key factor in tailoring patient management plans—has been identified by researchers in a study published in the August issue of *The Journal of Nuclear Medicine*. Imaging with 18F-FDG positron emission tomography/computed tomography (PET/CT), when compared to bone marrow biopsy, was more sensitive, showed a higher negative predictive value and was more accurate, changing treatment for 42 percent of patients with bone marrow involvement.

DLBCL is the most frequent subtype of high-grade non-Hodgkin lymphoma, accounting for nearly 30 percent of all newly diagnosed cases in the United States. In recent decades, there has been a 150 percent increase in incidence of DLBCL.

"In our study, we showed that in diffuse large B-cell lymphoma, 18F-FDG PET/CT has better [diagnostic performance](#) than bone marrow biopsy to detect bone marrow involvement and provides a better prognostic stratification. While bone marrow biopsy is considered the gold standard to evaluate bone marrow involvement by high-grade lymphomas, 18F-FDG PET/CT is in fact the best method to evaluate extension of the disease, as well as avoid [invasive procedures](#)," said Louis Berthet, MD, lead author of the study "In Newly Diagnosed Diffuse Large B-Cell Lymphoma, Determination of Bone Marrow Involvement with 18F-FDG PET/CT Provides Better Diagnostic Performance and Prognostic Stratification Than Bone Biopsy."

The retrospective study included 133 patients diagnosed with DLBCL. All patients received both a whole-body 18F-FDG PET/CT scan, as well as a bone marrow biopsy to determine bone marrow involvement. A final diagnosis of bone marrow

involvement was made if the biopsy was positive, or if the positive PET/CT scan was confirmed by a guided biopsy, by targeted [magnetic resonance imaging](#) (MRI) or, after chemotherapy, by the concomitant disappearance of focal bone marrow uptake and uptake in other lymphoma lesions on 18F-FDG PET/CT reassessment. Progression-free survival and overall survival were then analyzed.

Thirty-three patients were considered to have bone marrow involvement. Of these, eight were positive according to the biopsy and 32 were positive according to the PET/CT scan. 18F-FDG PET/CT was more sensitive (94 percent vs. 24 percent), showed a higher negative predictive value (98 percent vs. 80 percent) and was more accurate (98 percent vs. 81 percent) than [bone marrow](#) biopsy. Among the 26 [patients](#) with positive 18F-FDG PET/CT results and negative biopsy results, 11 were upstaged to stage IV by PET/CT, which changed their treatment plans. 18F-FDG PET/CT was also determined to be an independent predictor of progression-free survival.

"Our findings add to the literature to prove the significance of 18F-FDG PET/CT in cancer evaluation and to democratize this imaging method," said Berthet. "Molecular imaging is the best method to adapt targeted therapies to each patient. The emergence of PET/MRI and novel radiotracers predicts an exciting new future for our field."

More information: "In Newly Diagnosed Diffuse Large B-Cell Lymphoma, Determination of Bone Marrow Involvement with 18F-FDG PET/CT Provides Better Diagnostic Performance and Prognostic Stratification Than Bone Biopsy" *The Journal of Nuclear Medicine*, 2013.

Provided by Society of Nuclear Medicine

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