

Technique using CT linked with improved detection of lymph node metastasis in patients with melanoma

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Preoperative 3-dimensional visualization of sentinel lymph nodes (SLNs) with a technique known as single-photon emission computed tomography/computed tomography was associated with a higher rate of detection of positive SLNs and a higher rate of disease-free survival among patients with melanoma, according to a study in the September 12 issue of *JAMA*.

"Melanoma has become an increasing interdisciplinary public health challenge worldwide. According to the [World Health Organization](#), the incidence of melanoma is increasing faster than any other cancer in the world. Melanoma is the third most common cancer in Australia and the fifth most common cancer in the United States. The [American Cancer Society](#) estimated that approximately 70,230 new melanomas were diagnosed in the United States during 2011, resulting in approximately 8,790 deaths," according to background information in the article.

"Because melanoma, depending on tumor depth, metastasizes early into regional lymph nodes, [sentinel lymph node](#) excision (SLNE) is probably the most important diagnostic and potentially therapeutic procedure for [patients](#) with melanoma. The histological status of the sentinel lymph node is the most relevant [prognostic factor](#) for overall survival in patients with melanoma, independent of primary tumor thickness." The authors add that the recently introduced hybrid single-[photon emission](#) computed tomography/computed tomography (SPECT/CT) imaging technique could help overcome the high false-negative rate of SLNE by providing

additional anatomical information to the surgeon.

Ingo Stoffels, M.D., of the University of Essen-Duisburg, Essen, Germany, and colleagues conducted a study to compare the association between SLNE with vs. without preoperative SPECT/[CT imaging](#) and metastatic node detection and disease-free survival in patients with cutaneous melanoma. The study included use of a melanoma patient database to identify a group of 464 patients eligible for SLNE between March 2003 and April 2011. A total of 403 patients with clinically negative lymph nodes, who underwent SLNE with or without preoperative SPECT/CT, qualified for subsequent analysis. Between March 2003 and October 2008, 254 patients with melanoma underwent SLNE without preoperative SPECT/CT. Between November 2008 and April 2011, all sentinel node scintigraphies (type of diagnostic imaging tests) were performed as SPECT/CT in 149 patients. Using SPECT/CT allowed SLNE in the head and neck area more frequently (2.0 percent for standard vs. 23.5 percent for SPECT/CT).

A total of 833 SLNs were removed from 403 patients. The researchers found 2.40 SLNs per patient in the SPECT/CT group and 1.87 SLNs per patient in the standard group; 51 of 358 excised SLNs (14.2 percent) in the SPECT/CT cohort and 54 of 475 SLNs (11.4 percent) in the standard cohort showed metastatic involvement. The authors were able to identify 41 patients (27.5 percent) with positive SLNs in the SPECT/CT cohort and 48 (18.9 percent) with positive SLNs in the standard cohort. The number of positive SLNs per patient was significantly higher in the SPECT/CT cohort than in the standard cohort (0.34 vs. 0.21).

"The local relapse rate in the SPECT/CT cohort was lower than in the standard cohort (6.8 percent vs. 23.8 percent), which prolonged 4-year disease-free survival (93.9 percent vs. 79.2 percent)," the researchers write.

The authors note that with the SPECT/CT technique, they were able to use smaller incisions in the head and neck area as well as alternative entry points due to the exact anatomical localization of the SLN.

"In conclusion, the preoperative visualization of SLN with SPECT/CT is technically feasible and facilitates the detection of additional positive SLNs. The use of this technique offers the physician the preoperative possibility of determining the exact location and visualization of the SLN...", the researchers write. "In patients with cutaneous [melanoma](#), the use of SPECT/CT-aided SLNE compared with SLNE alone was associated with higher detection of metastatic involvement and a higher rate of disease-free survival."

More information: *JAMA*. 2012;308[10]:1007-1014.

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