

## Non-radioactive imaging for SLN detection in melanoma

Multispectral optoacoustic tomographic (MSOT) imaging, a non-radioactive method, can detect sentinel lymph nodes (SLNs) at a frequency similar to the conventional lymphoscintigraphic imaging, according to a new study.

Ingo Stoffels (University of Duisburg-Essen, Essen, Germany) and colleagues did a cross-sectional study including 83 patients aged at least 18 years who had newly diagnosed melanoma, to compare MSOT imaging with lymphoscintigraphic imaging, which uses the radiotracer technetium-99m. All patients underwent SLN biopsy. First, patients had preoperative lymphoscintigraphic and single-photon emission CT imaging for SLN detection. Then, in preparation for MSOT imaging, patients had preoperative administration of the non-radioactive dye indocyanine green. The researchers detected

SLN basins by MSOT imaging intraoperatively with a near-infrared camera. SLNs were tested for radioactivity with a  $\gamma$  probe after SLN biopsy had been attempted with MSOT imaging. The primary endpoint was the concordance of detection of SLNs by MSOT imaging versus lymphoscintigraphic imaging.

Between June 2, 2014, and Feb 22, 2019, 165 SLNs were excised from 83 patients. Preoperatively, the researchers detected 106 SLN basins labeled with indocyanine green by MSOT imaging and 112 labeled with technetium-99m by lymphoscintigraphic imaging (concordance 94.6%). During intraoperative SLNs detection, 159 SLNs were identified by the near-infrared camera and 165 were identified by the  $\gamma$  probe (concordance 96.4%). MSOT imaging was able to detect SLNs

in all investigated regions with a penetration depth of 5 cm. After a median follow-up of 29 months (range 2–42), no false-negative sentinel nodes and no study-related serious adverse events were reported.

Joachim Klode (University of Duisburg-Essen), coauthor of the study, said, “Our results demonstrate that this new strategy may possibly allow non-radioactive detection of SLNs at a frequency similar to the current radiotracer standard. But our results have to be confirmed in a multicentre trial.”

“The results from this study are a welcome step toward clinical adoption of optoacoustic imaging and can be applied in [non-invasive detection of] malignant lesions beyond melanoma”, commented Keerthi Valluru (University of California, San Francisco, CA, USA).

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Published Online  
August 22, 2019  
[http://dx.doi.org/10.1016/S1470-2045\(19\)30540-6](http://dx.doi.org/10.1016/S1470-2045(19)30540-6)  
For the study by Stoffels and colleagues see *JAMA Netw Open* 2019; 2: e199020