

Imaging reveals changes in blood vessel growth in deadly melanoma skin cancer

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A new clinical study has shown that Dynamic Optical Coherence Tomography imaging of melanomas (D-OCT) reveals changes to the blood vessels that correlate with the depth of invasion of the melanoma. Researchers believe this could lead to a new faster method of rapidly assessing how dangerous a given melanoma is.

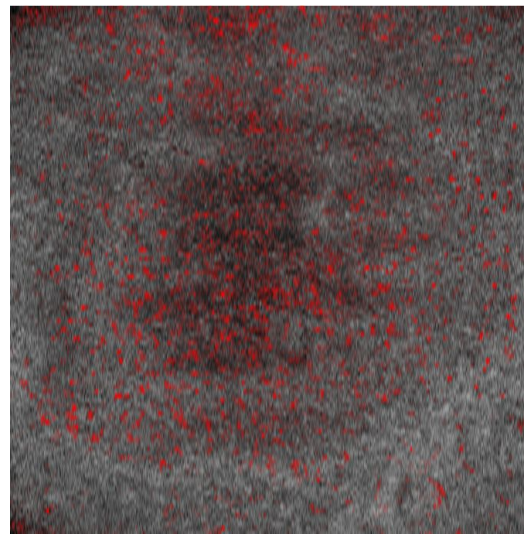
A more rapid assessment of the risk, would potentially allow patients with more serious invasive disease, access to the right treatment more directly, doing away with delays inherent in the traditional diagnosis.

The technique may also lead to reducing the number of patients with less aggressive tumours receiving sentinel lymph node biopsies, an expensive in-patient procedure which sometimes results in unpleasant long-term side-effects.

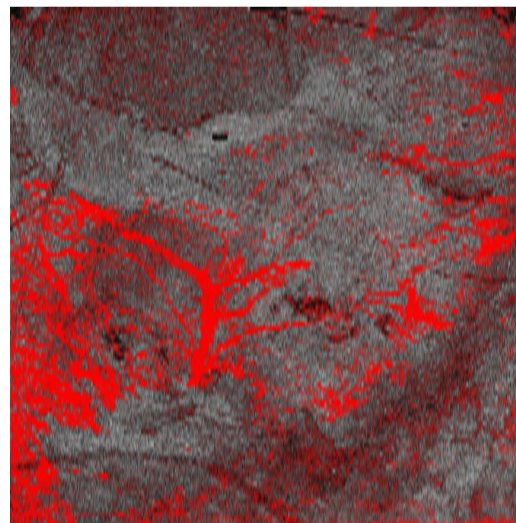
The clinical study was published in November issue of *Experimental Dermatology* and looked at the blood vessel shapes in OCT images of 127 melanomas at a variety of states of disease progression, collected at four leading European dermatology groups (University of Modena and Reggio Emilia, General Hospital Augsburg, University of Copenhagen and Collegium Medicum Berlin). The device used was Michelson Diagnostics' VivoSight OCT scanner which has regulatory clearance in Europe, USA and Australia for clinical use imaging skin. It was equipped with Dynamic OCT software that detects and displays the tiny blood vessels in the skin and the tumour.

Lead author Dr Nathalie de Carvalho (University of Modena and Reggio Emilia, Italy) explained:

“Cancers grow their own blood vessel network to supply oxygen and nutrients. We analysed the shapes of the vessels in the OCT images of melanomas and correlated the frequency of different shapes with the Breslow depths (the thickness of the tumours, measured from biopsy samples). We found that certain vessel shapes appeared much more frequently in thicker tumours. The vessels grown by the tumour seem to grow more chaotically and become more malformed as the cancer progresses.”



D-OCT Image of **early-stage melanoma**: the red dots and lines are small blood vessels



D-OCT image of **advanced melanoma**: showing large, distorted blood vessels

The Breslow depth is already used to assess the progress of the disease from early stages to serious metastatic disease, but it takes time for the biopsy results to come back from the laboratory. This new imaging approach may provide a short-cut to more quickly identify advanced metastatic melanomas so that patients can be fast-tracked to the right treatment.

Professor Julia Welzel (General Hospital Augsburg, Germany) said: *“Our goal with this work is to help develop a faster, more efficient and less invasive diagnostic and treatment pathway for melanoma. Patients with advanced disease should get aggressive treatment as quickly as possible; also those with early-stage melanomas should not have to undergo expensive invasive Sentinel Lymph Node Biopsy operations if their melanoma is reliably confirmed as very low-risk. We believe Dynamic OCT imaging could help with these goals and the results of this study are very encouraging. The next stage of our work is to analyse the link between vessel shapes and the actual degree of metastasis of the melanomas in a larger cohort, and not just the Breslow depth.”*

Jon Holmes, CEO of Michelson Diagnostics, said: *“This very exciting result shows for the first time that VivoSight OCT imaging may have a powerful future role in the clinical pathway for melanoma.”*

De Carvalho N, Welzel J, Schuh S, Themstrup L, Ulrich M, Jemec GB, Holmes J, Kaleci S, Chester J, Bigi L, Ciardo S. The vascular morphology of melanoma is related to Breslow index: an in vivo study with dynamic optical coherence tomography. *Experimental dermatology*. 2018 Sep 15.

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For more About Michelson Diagnostics' VivoSight OCT scanner go to www.vivosight.com

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