Immune profile of lymph nodes nearest to tumor may predict melanoma progression

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(Medical Xpress)—Melanoma patients who had a specific subtype of immune cells called CD30-positive T cells in the lymph nodes closest to their tumors were more likely to have their disease progress within five years, according to data published in *Cancer Research*, a journal of the American Association for Cancer Research.

The lymph nodes closest to the tumor are called the sentinel lymph nodes. Because sentinel nodes are the initial site to which the tumor drains, they are usually the primary place of metastasis in patients affected by cancers including melanoma.

"Using the study of genetic profiles, we found that the sentinel node contains information useful to foresee whether or not a patient with melanoma will have an aggressive cancer," said Monica Rodolfo, Ph.D., staff scientist in the Immunotherapy Unit at Fondazione IRCCS Istituto Nazionale dei Tumori in Milan, Italy. "Although this study has a relatively small number of patients, it provides proof-of-principle that the immune system is crucially involved in controlling tumor growth, and that sentinel nodes are endowed with precise information on cancer behavior.

"We found that T cells bearing a marker called CD30 are more frequent in the sentinel nodes of patients with aggressive melanoma, and they are also found in the blood of patients with advanced disease," continued Rodolfo. "The clinical implications are clear and straight: finding a way to avoid further surgery and intensive therapies to those patients who are

less likely to have a reccurence, and directing these treatments instead to patients who are at high risk for recurrence. Our results also encourage the genetic study of the sentinel node as a reliable tool to personalize patient treatment."

Rodolfo and colleagues designed an exploratory study to investigate the sentinel nodes from 42 melanoma patients with different stages of disease aggressiveness, and performed genetic analyses. They aimed to identify a molecular "signature" that could predict which patients are at high risk for tumor recurrence. To do this, they analyzed immune cells called lymphocytes, which include T cells, from the sentinel lymph nodes of patients whose tumors recurred or had not recurred at five years after surgical removal of the primary tumor.

In addition, the researchers collected blood samples from 25 patients with stage 3 and stage 4 melanoma and compared them with blood collected from age- and gender-matched, healthy donors.

Rodolfo and colleagues found that the sentinel lymph nodes of patients whose melanomas recurred after five years had immune cells with dysregulated genes that were involved in processes such as cell survival, cell proliferation, and metabolism. Upon further validation, they found that T cells bearing the marker CD30 were upregulated in sentinel nodes of melanomas that recurred at five years, as well as in patients with advanced disease.

"We hypothesize that CD30 may become a novel target for treatments aimed at restoring effective antitumor immune responses in melanoma patients," said Rodolfo. "Considering that drugs directed against this molecule have recently been developed to treat lymphoma, this hypothesis might be easily tested in the near future."

More information: "Transcriptional Profiling of Melanoma Sentinel

Nodes Identify Patients with Poor Outcome and Reveal an Association of CD30+ T Lymphocytes with Progression." Viviana Vallacchi, Elisabetta Vergani, Chiara Camisaschi, Paola Deho, Antonello D. Cabras, Marialuisa Sensi, Loris De Cecco, Niccolò Bassani, Federico Ambrogi, Antonino Carbone, Federica Crippa, Barbara Vergani, Paola Frati, Flavio Arienti, Roberto Patuzzo, Antonello Villa, Elia Biganzoli, Silvana Canevari, Mario Santinami, Chiara Castelli, Licia Rivoltini, and Monica Rodolfo. *Cancer Res* January 1, 2014 74:130-140; DOI: 10.1158/0008-5472.CAN-13-1672