

Researchers identify gene set that shows which patients benefit from chemo after surgery

September 7 2010

Lung cancer researchers have identified a genetic signature that can help doctors determine which patients with early-stage non-small cell lung cancer are at high risk for developing disease recurrence and therefore may benefit from chemotherapy after surgery ("adjuvant chemotherapy").

"The findings give patients and their doctors a clearer map of the appropriate post-operative treatment route to follow. Not all patients benefit from chemotherapy after surgery and those with less [aggressive cancer](#) may be spared from the potentially debilitating side effects of this treatment," says principal investigator Dr. Ming Tsao, pathologist at the Princess Margaret Hospital (PMH) Cancer Program, University Health Network (UHN), and Professor of Laboratory Medicine and Pathobiology at the University of Toronto. He also holds the M. Qasim Choksi Chair in [Lung Cancer](#) Translational Research at UHN.

"Our study was rigorously validated by multiple testing across data from different patient populations and so we believe these findings can be applied generally to other patients with early-stage non-small cell lung cancer," says Dr. Tsao.

"The ability to tell whether a particular patient is a good candidate for adjuvant chemotherapy will bring us closer to our goals of improving patient care through personalized medicine," adds study collaborator Dr.

Frances Shepherd, PMH medical oncologist and holder of the Scott Taylor Chair in Lung Cancer Research at UHN.

The study, published online today in the [Journal of Clinical Oncology](#) (JCO 64325), advances the 2005 findings of the NCIC Clinical Trials Group study JBR.10, conducted in collaboration with the U.S. National Cancer Institute. The JBR.10 findings showed significant survival benefit from the anti-cancer drugs vinorelbine and cisplatin in patients with early-stage (stage I and II) non-small cell lung cancer whose tumors had been surgically removed. Dr. Tsao's research team and collaborators at NCIC Clinical Trials Group at Queen's University performed a genetic analysis of tumor tissue from 133 of the 482 patients from the JBR.10 study who had banked frozen tumor samples.

The Tsao team identified a set of 15 genes that, in 62 patients who did not receive chemotherapy after surgery, predicted which patients had aggressive cancers with high risk of recurrence and death (31 patients), and which had less aggressive disease and low risk of recurrence (31 patients).

They then applied the signature to 71 patients who were randomized to receive chemotherapy in the JBR.10 trial. Patients predicted to have aggressive disease experienced the greatest benefit from chemotherapy - with a 67 percent reduction in the risk of death - while chemotherapy did not reduce the risk of death in patients designated as low risk.

While a previous JBR.10 analysis showed that overall only patients with stage II disease benefited from chemotherapy after surgery, Dr. Tsao's study demonstrates that the 15 gene signature may identify patients with both stage I and II cancers who may benefit from post-operative [chemotherapy](#).

Provided by University Health Network

Citation: Researchers identify gene set that shows which patients benefit from chemo after surgery (2010, September 7) retrieved 6 May 2024 from

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