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Blood test may identify lung cancer patients likely to respond to erlotinib

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Testing for the presence of specific cancer protein 'fingerprints' in the blood of lung cancer patients may be a useful means of identifying a subgroup whose tumors are more likely to shrink when treated with the drug erlotinib, especially when other testing methods are unavailable, according to new data presented at the 2nd European Lung Cancer Conference in Geneva, Switzerland.

Erlotinib is one of a class of drugs that specifically inhibits an important cell-surface molecule known as the epidermal growth factor receptor (EGFR), which is highly expressed in some forms of cancer, including lung cancer. By blocking this receptor, drugs such as erlotinib aim to slow tumor growth and proliferation.

Prof David Carbone from Vanderbilt-Ingram Cancer Center in Nashville, Tennessee, and Canadian colleagues analyzed blood samples from the NCIC Clinical Trials Group (NCIC CTG) BR.21 study that had shown that erlotinib improved survival compared to placebo in patients with advanced non-small-cell lung cancer who had already tried one or two other drugs.

In the new study, the researchers analyzed blood samples that had been taken from some patients before they started treatment in the BR.21 study. They performed this analysis on patients who received the drug and on patients who received the placebo, looking for specific proteomic profiles already known to predict outcomes in patients treated with EGFR-blockers.

"The bottom line is that the proteomic test --comparing 'good' and 'poor' profiles-- was strongly prognostic in both erlotinib and placebo arms," said Prof Carbone. "Proteomics 'good' patients also had a significantly higher response rate than proteomics 'poor' patients (9.8% vs. 0.9%, p=0.002).

Prof Carbone notes that there are other methods available to analyze the EGFR pathway of lung cancers, including sequencing of the EGFR gene, or a technique known as fluorescence in-situ hybridization (FISH) to assess EGFR gene copy number, in which tumor tissue samples are directly studied under a microscope.

"FISH overall was a better predictor of benefit, but can only be done with adequate biopsy tissue, which was available in this study only in 22% of patients. With the serum test, 99% of patients had a successful determination of proteomic status."

"Thus, I think this test may be of potential value in identifying a subgroup of patients with a good prognosis and who are likely to have response to erlotinib; it may be of particular value for those in whom tumor tissue is inadequate or unavailable," Prof Carbone said.

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