Quick, easy test identifies aggressive type of lung cancer in never-smokers

EurekAlert

An inexpensive and rapid testing method can effectively identify a sub-group of never-smoking lung cancer patients whose tumors express a molecule associated with increased risk of disease progression or recurrence, US researchers have found.

Dr Ping Yang from the Mayo Clinic, Rochester, USA, and colleagues, reported the findings at the European Multidisciplinary Conference in Thoracic Oncology (EMCTO), 24-26 February 2011, Lugano, Switzerland.

Approximately 8% - 12% of patients with lung adenocarcinoma who have never smoked cigarettes carry tumors that express a protein product called anaplastic lymphoma kinase (ALK), Dr Yang said. "This subset of patients are at more than double the risk of experiencing disease progression or recurrence within 5 years of initial diagnosis compared to never-smokers whose lung adenocarcinoma tumors are ALK-negative."

The ability to test for ALK status in these patients may help doctors select the most appropriate therapies for maximum clinical benefit, Dr Yang explained. Her group's study aimed to see whether immunohistochemistry screening, followed by a confirmatory test using fluorescence in situ hybridization (FISH), is a practical way to do this.

Immunohistochemistry tests use antibodies to identify specific proteins in tissue sections; FISH uses fluorescent probes to bind to specific DNA sequences in the chromosomes of individual cells.

In a study of 303 samples, the research team found that immunohistochemistry results correlated well with the results of FISH. Tissue samples with the highest immunohistochemistry scores (IHC 3+) were all FISH positive, while those with no immunohistochemistry staining (IHC 0) were FISH negative.

Based on these findings, only samples that were scored with the intermediate IHC scores of 1+ and 2+ would need confirmatory testing with FISH, Dr Yang explained. "In this particular cohort, IHC score 2+ and 1+ cases represented approximately 27% of those screened. Even if confirmatory testing is done on all IHC 2+ and 1+ cases, confirmatory testing could be avoided on roughly three quarters of the cases."

Immunohistochemistry is routinely performed in pathology labs and is a relatively inexpensive and rapid test method. "Because it is already performed in most pathology labs, testing can be done on-site versus sending a sample to another

diagnostic testing site. Thus, IHC may be a good initial screening tool for ALK status," Dr Yang explained.

Overall, the researchers found that 8.2-12.2% of this never-smoking group with lung adenocarcinoma had tumors that expressed ALK. The ALK positive tumors were significantly more aggressive as measured by tumor grade of differentiation and stage, and were diagnosed in younger patients, Dr Yang said. However, there are no guidelines or standard protocols for ALK testing by IHC at the present time; proper standardization and validation of IHC procedures for ALK testing are needed, including evaluating the effectiveness of different antibodies, Dr. Yang added.

Commenting on the research, which she was not involved in, Dr Fiona Blackhall, Consultant Medical Oncologist and Honorary Senior Lecturer at The Christie Hospital NHS Foundation Trust, and Manchester Cancer Research Centre, UK said: "Dr Yang and colleagues have conducted an important study showing that immunohistochemistry may be an efficient screen to identify cases for confirmatory FISH. Their work provides a basis from which to evolve a practical, clinical testing algorithm that incorporates IHC as a first step."

"Further work is now needed to validate these findings, optimize the methodology for IHC and the criteria for FISH," Dr Blackhall added. "Their finding that patients with ALK-positive tumors may have a worse outcome following surgery is provocative, highlighting the clinical and therapeutic importance of identifying and learning more about this molecular subtype of non-small cell lung cancer."

SOURCE [1]

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