Novel growth pattern classification predictive of outcome in non-small cell lung cancer

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Classifying non-small cell lung tumors by growth patterns had a strong predictive value for measures of survival.

Growth pattern refers to the tumor growth in relation to normal lung tissue and blood vessels within the tumor; tumors need these blood vessels to survive and scientists have been studying these patterns in an effort to individualize therapy.

In data presented at the AACR-IASLC Joint Conference on Molecular Origins of Lung Cancer, researchers classified tumors into three growth patterns: destructive, alveolar and papillary. In destructive patterns, the tumor makes its own microenvironment for further growth. In the alveolar pattern, the tumor uses the microenvironment of the lung to grow, and in the papillary pattern the normal lung tissue is preserved in the presence of a new microenvironment.

Peyman Sardari Nia, M.D., Ph.D., a postdoctoral fellow at the University of Antwerp in Belgium, and colleagues tested this classification to see if they had prognostic value in patients with non-small cell lung cancer.

"The current management, treatment and prognosis of lung cancer is treatment based on tumor-node-metastasis staging," said Sardari Nia. "Unfortunately, tumor node metastasis does not account for survival differences in the same stage and does not provide information about the biology of the tumor."

For this study, Sardari Nia and colleagues enrolled 432 patients who had a complete resection for primary non-small cell lung cancer. The researchers followed the patients for about 50 months. According to the classifications outlined, 71.1 percent had a destructive growth pattern, 13.9 percent had a papillary growth pattern and 15 percent had an alveolar growth pattern.
These growth patterns were independent predictors for overall survival, disease-specific survival and disease-free survival.

Patients with an alveolar growth pattern had a 52 percent greater chance of a poor prognosis for overall survival and a nearly two-fold increased risk for poorer disease-specific survival and for disease-free survival.

"This biological classification provides explanations for survival differences at the same disease stage," said Sardari Nia. "Additionally, these growth patterns represent distinct biologic subtypes implying that different growth patterns might respond differently to the pallet of treatment modalities, paving the way for individualization of the patient's treatment."

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