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Genetic composition of multicentric lung tumors appears to be similar

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Multicentric carcinogenesis with the same genetic mutation appears to occur in lung adenocarcinoma, according to data presented at the AACR-IASLC Joint Conference on Molecular Origins of Lung Cancer: Biology, Therapy and Personalized Medicine, held Jan. 8-11, 2012.

Data also demonstrated that the EGFR and KRAS genes, which are mutually exclusive, can be used to define clinically relevant molecular subsets of lung adenocarcinoma and can define tumor clonality.

"The information on genetic status of multiple lung cancers is valuable and might be able to presume genetic backgrounds for carcinogenesis of the lung," said Kenji Sugio, M.D., Ph.D., research director and chief of the department of thoracic oncology at the National Kyushu Cancer Center in Fukuoka, Japan.

By using high-resolution computerized tomography (CT), researchers are able to detect small-sized lung tumors and "sometimes multiple tumors." Sugio and his colleagues analyzed the genotype of the EGFR and KRAS genes and the expression of the EML4-ALK fusion gene in synchronous multiple noninvasive adenocarcinomas to evaluate the possibility of multicentric carcinogenesis. According to Sugio, in five of the nine patients in this study, multiple tumors, which were defined as pathologically noninvasive tumors, showed the same genetic mutation.

"These findings demonstrate that multicentric carcinogenesis under the same genetic backgrounds occurs in lung adenocarcinoma," Sugio said.

"We expected a high incidence rate of the same genetic mutation in synchronous multiple lung adenocarcinomas because the whole lung of patients with lung cancer is thought to be under an almost uniform environment of carcinogen."

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