

Multifocal lung cancers appear to originate from single cancer clone

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Multiple, anatomically distinct lung cancer tumors may frequently arise from a single cancer cell, according to a retrospective analysis of patient tumor samples published in the April 7 online issue of the *Journal of the National Cancer Institute*.

Some [lung cancer patients](#) have multiple anatomically distinct tumors at the time of diagnosis. Although such multiple tumors usually share a common appearance, it has been unclear whether they arise from a single [tumor](#) or are independent primary cancers.

In the current study, Liang Cheng, M.D., of the Indiana University School of Medicine in Indianapolis, and colleagues examined 70 lung cancer tumors from 23 female and seven male patients to determine whether multiple tumors from an individual patient shared a common genetic pattern. The investigators analyzed the tumors for chromosome loss at six loci previously associated with lung cancer and for mutations in the TP53 gene. They also analyzed the X-chromosome inactivation pattern in tumors from female patients.

Based on these three analyses, the investigators concluded that the multiple tumors in 23 of the 30 patients (77 percent) arose from a single cancer clone.

"Our findings support the current classification of multifocal lung cancers as advanced-stage cancers...rather than separate primary cancers and the use of therapeutic strategies tailored for patients with advanced-

staged cancers," the authors write.

"The results of these studies pose both important biological and clinical management questions," according to Adi F. Gazdar, M.B.B.S., and John D. Minna, M.D., of the University of Texas Southwestern Medical Center in Dallas, who wrote an accompanying editorial. The editorialists review what is known about the biology of multifocal cancers and note that as many as 8 percent of lung cancer patients have multiple anatomically distinct tumors at the time of diagnosis.

An updated lung cancer classification system is expected sometime in 2009 and will distinguish between patients with regional metastatic disease, including those with multiple tumors at diagnosis, and patients with distant metastases. "Clearly, multifocal lung cancers (without distant metastases) constitute a unique set of tumors having heterogeneous origins and better than expected prognosis and should be classified and treated appropriately," the editorialists write.

More information:

Article: Wang X et al. Evidence for Common Clonal Origin of Multifocal Lung Cancers, *J Natl Cancer Inst* 2009, 101:560-570.

Editorial: Gazdar A and Minna J. Multifocal Lung Cancers — Clonality vs Field Cancerization and Does It Matter? *J Natl Cancer Inst* 2009, 101:541-543.

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