

SOUTHWESTERN NEWS

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STUDY REVEALS GENDER AFFECTS LUNG-CANCER DEVELOPMENT

DALLAS — April 21, 1999 — Once again evidence says that differences exist between the sexes. Researchers have discovered that men and women may not in fact be equal – at least with respect to the pattern of precancerous lesions in the lungs of current and former smokers.

Dr. Adi Gazdar, UT Southwestern professor of pathology, Dr. Stephen Lam and colleagues in Canada and other investigators at the National Cancer Institute in Bethesda, Md., have published the first study that analyzes the gender differences in precancerous changes in smokers' lung tissue. This study, in the April 21 issue of the *Journal of the National Cancer Institute*, finds that women develop a different pattern of bronchial changes than men do; that airflow obstruction, a common means to assess those at risk of lung cancer, does not seem to be valid especially for women; and that lung damage due to smoking persists for many years and probably for life.

More men and women die from lung cancer than from any other type of cancer. This year an estimated 171,600 new cases of lung cancer will be diagnosed, and 158,000 people will die from this disease. Approximately 50 percent of lung cancer occurs in former smokers. Women are more susceptible to the harmful effects of tobacco-related carcinogens – the odds ratios for major types of lung cancer are consistently higher in women than in men at every level of exposure to cigarette smoke. Furthermore, this gender difference cannot be explained by differences in baseline exposure, smoking history or body size; it is likely due to women's higher susceptibility to tobacco carcinogens.

"Cancer is the result of a complex multistep process," said Gazdar, associate director of the Nancy B. and Jake L. Hamon Center for Therapeutic Oncology Research. "We are actively

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trying to develop methods of early detection and chemoprevention – ways to chemically reverse precancerous lesions and block cancer development – for those at high risk.”

The scientists found that men had a significantly higher incidence of precancerous lesions in the large central airways than women. They also found that fewer women than men had high-grade preinvasive lesions. Because women develop more cancers in the peripheral (outer) parts of the lung than men do, Gazdar and co-workers presume that women smokers are selectively damaging these parts of the lung, while smoking damage in men targets the larger, more centrally located airways.

The take-home lesson from this study is that methods of lung-cancer screening in high risk populations must take gender into consideration, and perhaps, different screening procedures and criteria will have to be used for men and for women.

This study was done in collaboration with lead author Lam and his colleagues Dr. Jean leRiche, Dr. Yvonne Zheng, Dr. Andrew Coldman and Dr. Calum MacAulay of the British Columbia Cancer Agency and the University of British Columbia. Dr Ernest Hawk and Dr. Gary Kelloff of the National Cancer Institute (NCI), also participated. Gazdar is holder of the W. Ray Wallace Distinguished Chair in Molecular Oncology Research at UT Southwestern.

The research is funded by the NCI, the National Institutes of Health and a NIH-funded SPORE (Specialized Program of Research Excellence) in Lung Cancer.

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