Secondhand smoke exposure is linked to worsening of lung function for persons with cystic fibrosis

January 29 2008

Exposure to secondhand smoke is associated with adverse effects on lung function among persons with cystic fibrosis, with this effect being worse for persons with certain gene variations, according to a study in the January 30 issue of JAMA.

Cystic fibrosis (CF) is a fatal disorder that affects more than 30,000 individuals in the United States, with the major cause of illness and death being progressive obstructive lung disease. “Despite public health warnings, including a recent U.S. surgeon general’s report stating that there is no risk-free level of secondhand smoke exposure, substantial numbers of individuals with CF are exposed to secondhand smoke. Unfortunately, published studies have been inconsistent in associating poorer clinical outcomes in patients with CF with secondhand smoke exposure,” the authors write.

J. Michael Collaco, M.D., of Johns Hopkins University School of Medicine, Baltimore, and colleagues conducted a study examining several issues including whether secondhand smoke exposure is associated with worse lung disease and other outcomes in individuals with CF, and if the gene-environment interactions between the CF-causing gene (CFTR) or the transforming growth factor â1 (TGFâ1) gene influence the effect of secondhand smoke exposure on lung function. The researchers analyzed data from the U.S. Cystic Fibrosis Twin and Sibling Study, with missing data supplemented by the Cystic

Fibrosis Foundation Data Registry. Of the 812 participants with data concerning secondhand smoke exposure in the home, 188 (23.2 percent) were exposed. Of the 780 participants with data showing their mother's smoked during pregnancy, 129 (16.5 percent) were exposed.

The researchers found that secondhand smoke exposure was associated with decreased lung function for all measures of lung function studied. Also, socioeconomic status did not worsen the relationship between secondhand smoke exposure and reduced lung function. They also found that certain mutations in the CFTR gene determines the magnitude of the effect of secondhand smoke exposure on lung function in patients with CF.

"… CF may be a good model for uncovering gene-environment interactions that are detrimental to lung function. This study also raises the specter that healthy children bearing certain genetic variants may be at much higher risk for worse outcomes as a result of secondhand smoke exposure. Demonstration that genetically defined subsets of patients with CF exposed to secondhand smoke in the home have a substantial lifetime reduction in lung function provides potent justification for eradication of cigarette smoke exposure for all individuals with this life-limiting disorder," the authors conclude.

Source: JAMA and Archives Journals