

Higher levels of compound in blood associated with lower risk of respiratory disease

February 15 2011

An analysis of data including more than 500,000 adults indicates that levels in the blood of bilirubin (a compound produced by the breakdown of hemoglobin from red blood cells) in the normal range but relatively higher were associated with a reduced risk of lung cancer, chronic obstructive pulmonary disease and all-cause death, according to a study in the February 16 issue of JAMA.

Serum total bilirubin is routinely measured in the primary care setting to identify hepatobiliary (liver, gall bladder and [bile ducts](#)) and blood diseases. Bilirubin may have cytoprotective (cell protective) properties, including antioxidant and anti-inflammatory effects, according to background information in the article. "Experimental studies using animal models support a protective effect of increased bilirubin against respiratory injury by environmental stressors. The epidemiological relationship between bilirubin level and the risk of respiratory disease is not well characterized," the authors write.

Laura J. Horsfall, M.Sc., of University College London, and colleagues examined the association between serum bilirubin levels and the incidence of [chronic obstructive pulmonary disease](#) (COPD), lung cancer and all-cause death in a large population-based group of patients from the United Kingdom. The study included 504,206 adults from a U.K. primary care research database (the Health Improvement Network) with levels of serum bilirubin recorded between January 1988 and

December 2008.

After various analyses and adjustment for several important health indicators, the researchers found that moderately higher levels of bilirubin within the range considered normal were associated with reduced risk of respiratory disease and all-cause mortality. Estimates for the incidence rate of lung cancer per 0.1-mg/dL increase in bilirubin level were an 8 percent decrease for men and an 11 percent decrease for women. The estimate for COPD in men per 0.1-mg/dL increase in bilirubin level was a 6 percent decrease, and for mortality in men was a 3 percent decrease. The results for COPD and mortality in women were similar.

"Based on our findings, bilirubin levels within the normal range appear to capture information about patients that may reflect a combination of environmental and genetically determined susceptibility to respiratory diseases," the authors write. "Further research is needed to investigate causal associations between bilirubin levels and respiratory outcomes. A fuller understanding of these mechanisms may lead to the potential use of targeted clinical treatments that mildly suppress UGT1A1 [liver enzyme uridine diphosphate-glucuronosyltransferase 1] activity and moderately increase bilirubin levels."

More information: JAMA. 2011;305[7]691-697.

Provided by JAMA and Archives Journals

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