Increased C-Reactive Protein and Increased Plasma Interleukin-6 May Synergistically Affect the Progression of Coronary Atherosclerosis in Obstructive Sleep Apnea Syndrome

To the Editor:

Shamsuzzaman and coworkers have reported that plasma C-reactive protein levels as shown by a high sensitivity assay (hsCRP) were significantly higher in patients with obstructive sleep apnea syndrome (OSAS) than in controls. Further, hsCRP levels were independently associated with OSAS severity. This is strong evidence that OSAS is linked to cardiovascular diseases. However, the other inflammatory markers of cardiovascular risk are not comprehensively assessed in that study.

Here, we report that plasma levels of other inflammatory cytokines, interleukin-6 (IL-6), and tumor necrosis alpha (TNF-α) are elevated in patients with OSAS, and the levels are associated with levels of hsCRP. We studied 40 patients (34 men and 6 women) with newly diagnosed OSAS who were free of other diseases and compared hsCRP, IL-6, and TNF-α measurements in these patients with measurements obtained in 40 age- and body mass index-matched control subjects without OSAS. Assays for the inflammatory markers hsCRP, IL-6, and TNF-α were performed on plasma samples obtained. The plasma hsCRP levels were significantly higher in patients with OSAS than in controls (0.31 ± 0.13 mg/dL versus 0.12 ± 0.06 mg/dL, P < 0.05). The plasma IL-6 levels (7.6 ± 1.1 ng/mL versus 3.5 ± 0.7 ng/mL, P < 0.05) and TNF-α (9.5 ± 2.2 ng/mL versus 4.4 ± 0.9 ng/mL, P < 0.05) were elevated in patients with OSAS but not in controls. Each level of IL-6 or TNF-α was significantly associated with the level of hsCRP. These results suggest that both increased C-reactive protein and increased inflammatory cytokines (IL-6 and TNF-α) may synergistically affect the progression of coronary atherosclerosis in patients with OSAS.

Others have reported that OSAS patients had higher plasma concentrations of the inflammatory, fatigue-causing, and insulin resistance-producing cytokines TNF-α and IL-6 than do nonapneic obese men. Our data further indicate that the levels of inflammatory cytokines are correlated with the levels of hsCRP in OSAS patients. Because admission levels of IL-6 and CRP were reported to be elevated in patients with unstable angina, IL-6 and CRP are involved in the major adverse cardiac events.

Body mass index was significantly higher in patients with coronary artery disease and OSAS than in patients with coronary artery disease without OSAS. Because abdominal obesity is associated with elevations of hsCRP and inflammatory cytokines, weight loss may lower IL-6 and CRP levels and may beneficially suppress an immune response, resulting in the prevention of atherosclerotic lesions in OSAS patients.

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