

Longer duration of obesity associated with subclinical coronary heart disease

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In a study of adults recruited and followed up over the past 3 decades in the United States, longer duration of overall and abdominal obesity beginning in young adulthood was associated with higher rates of coronary artery calcification, a subclinical predictor of coronary heart disease, according to a study in the July 17 issue of *JAMA*.

"Subclinical atherosclerosis, identified by the presence of coronary artery calcification (CAC), progresses over time, and predicts the development of coronary heart disease events," according to background information in the article. The degree of overall and abdominal obesity, as reflected by an increased body mass index (BMI) and waist circumference, respectively, are important risk factors for the presence and progression of CAC. "Understanding the influence of the duration of obesity or the presence or progression of atherosclerosis is critical, given the obesity epidemic. With a doubling of obesity rates for adults and a tripling of rates for adolescents during the last 3 decades, younger individuals are experiencing a greater cumulative exposure to excess adiposity during their lifetime. However, few studies have determined the consequences of long-term obesity," the authors write.

Jared P. Reis, Ph.D., of the National Heart, Lung, and Blood Institute, Bethesda, Md., and colleagues conducted a study to investigate whether the duration of overall and abdominal obesity was associated with the presence and 10-year progression of CAC. The study included 3,275 white and black adults 18 to 30 years of age at the beginning of the study period in 1985-1986 who did not initially have overall obesity (BMI

≥ 30) or abdominal obesity (men; waist circumference [WC] >40.2 inches; women: >34.6 inches) in the multicenter, community-based Coronary Artery Risk Development in Young Adults (CARDIA) study. Participants completed computed tomography scanning for the presence of CAC during the 15-, 20-, or 25-year follow-up examinations. Duration of overall and abdominal obesity was calculated using repeat measurements of BMI and WC, respectively, performed 2, 5, 7, 10, 15, 20, and 25 years after the beginning of the study.

Of the 3,275 eligible participants, 45.7 percent were black and 50.6 percent were women. During followup, 40.4 percent and 41.0 percent developed overall and abdominal obesity, respectively; the average duration of obesity was 13.3 years and 12.2 years for those who developed overall and abdominal obesity, respectively.

Overall, CAC was present in 27.5 percent ($n = 902$) of participants. The researchers found that the presence and extent of CAC were associated with duration of overall and abdominal obesity. "Approximately 38.2 percent and 39.3 percent of participants with more than 20 years of overall and abdominal obesity, respectively, had CAC compared with 24.9 percent and 24.7 percent of those who never developed overall or abdominal obesity," the researchers write. "Extensive CAC was present in 6.5 percent and 9.0 percent of those with more than 20 years of overall and abdominal obesity, respectively, compared with 5.7 percent and 5.3 percent of those who never developed overall or abdominal obesity, respectively."

The rates of CAC were higher with a longer duration of overall obesity and abdominal obesity. Approximately 25.2 percent and 27.7 percent of those with more than 20 years of overall and abdominal obesity, respectively, experienced progression of CAC compared with 20.2 percent and 19.5 percent of those with 0 years.

"In conclusion, in this study a longer duration of overall and abdominal obesity beginning in young adulthood was associated with CAC and its 10-year progression through middle age independent of the degree of adiposity," the authors write. "These findings suggest that the longer duration of exposure to excess adiposity as a result of the obesity epidemic and an earlier age at onset will have important implications on the future burden of coronary atherosclerosis and potentially on the rates of clinical cardiovascular disease in the United States."

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