

Association between duration of overall and abdominal obesity beginning in young adulthood and coronary artery calcification in middle age.

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Association between duration of overall and abdominal obesity beginning in young adulthood and coronary artery calcification in middle age.

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Source

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Abstract

IMPORTANCE:

Younger individuals are experiencing a greater cumulative exposure to excess adiposity over their lifetime. However, few studies have determined the consequences of long-term obesity.

OBJECTIVE:

To examine whether the duration of overall and abdominal obesity was associated with the presence and 10-year progression of coronary artery calcification (CAC), a subclinical predictor of coronary heart disease.

DESIGN, SETTING, AND PARTICIPANTS:

Prospective study of 3275 white and black adults aged 18 to 30 years at baseline in 1985-1986 who did not initially have overall obesity (body mass index [BMI] ≥ 30) or abdominal obesity (men: waist circumference [WC] >102 cm; women: >88 cm) 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 baseline.

MAIN OUTCOMES AND MEASURES:

Presence of CAC was measured by computed tomography at the year 15 (2000-2001), year 20 (2005-2006), or year 25 (2010-2011) follow-up examinations. Ten-year progression of CAC (2000-2001 to 2010-2011) was defined as incident CAC in 2010-2011 or an increase in CAC score of 20 Agatston units or greater.

RESULTS:

During follow-up, 40.4% and 41.0% developed overall and abdominal obesity, respectively. Rates of CAC per 1000 person-years were higher for those who experienced more than 20 years vs 0 years of overall obesity (16.0 vs 11.0, respectively) and abdominal obesity (16.7 vs 11.0). Approximately 25.2% and 27.7% of those with more than 20 years of overall and abdominal obesity, respectively, experienced progression of CAC vs 20.2% and 19.5% of those with 0 years. After adjustment for BMI or WC and potential confounders, the hazard ratios for CAC for each additional year of overall or abdominal obesity were 1.02 (95% CI, 1.01-1.03) and 1.03 (95% CI, 1.02-1.05), respectively. The adjusted odds ratios for CAC progression were 1.04 (95% CI, 1.01-1.06)

and 1.04 (95% CI, 1.01-1.07), respectively. Associations were attenuated but largely persisted following additional adjustment for potential intermediate metabolic factors during follow-up.

CONCLUSIONS AND RELEVANCE:

Longer duration of overall and abdominal obesity was associated with subclinical coronary heart disease and its progression through midlife independent of the degree of adiposity. Preventing or at least delaying the onset of obesity in young adulthood may lower the risk of developing atherosclerosis through middle age.

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