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Body Mass Index and Risk of Future Hypertension in Women

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Various factors have been implicated in the development of hypertension, including overweight and obesity. The negative impact of weight on future hypertension has been observed in different settings. Higher body mass index (BMI) at baseline, sometimes even within the normal range, has been shown to increase the risk of developing hypertension in both women^{1,2} and men,^{2,3} and this holds in both early adulthood and midlife. In this context, it has also been reported that weight loss reduces both systolic and diastolic blood pressures.⁴ Several abnormalities, involving the sympathetic nervous system, the renin-angiotensin-aldosterone system, endothelial function, insulin sensitivity, and renal function, have been implicated in the pathogenesis of hypertension in overweight and obese individuals.⁵

In this issue of the *American Journal of Hypertension*, the relationship between BMI and other adiposity measures at baseline and future hypertension has been further analyzed.⁶ Shuger *et al.*⁶ studied 5,296 initially healthy normotensive women. During the follow-up (mean duration 16.7 years), 592 women developed hypertension. Higher BMI, even within the normal range, was associated with higher risk of future hypertension. Particularly, compared with women in the first quintile of BMI (<20 kg/m²), the hazard ratios (95% confidence interval) of developing hypertension for those with BMI in the fourth (22.6–24.7 kg/m²) and last quintile (>24.7 kg/m²) were 1.36 (1.03–1.81) and 2.01 (1.52–2.66), respectively ($P_{\text{trend}} < 0.01$). Moreover, in a subgroup of subjects (3,189) with five adiposity measures, significant positive association with hypertension was found across incremental quintiles of BMI, percent body fat, and fat mass, but not waist circumference and fat-free mass. These results were obtained after adjustment for various confounders at baseline, including resting systolic and diastolic blood pressures.

This study, reporting a large number of subjects and outcomes, adds further knowledge to the relationship between BMI and risk of future hypertension in women. Some aspects,

however, need to be discussed. First, there was no association between higher BMI and risk of future hypertension in women >55 years. The authors report that this aspect may be related to the small number of hypertension outcomes in some BMI groups. Thus, other studies are needed to address this issue in older subjects. Second, risk of future hypertension was associated with increasing quintiles of BMI, percent body fat, and fat mass, but not waist circumference, though subjects with abdominal obesity had a significantly higher risk than those without. Notably, at present abdominal obesity is considered a more powerful predictor of cardiovascular disease than overall obesity. In this study, increasing values of BMI are better predictors of hypertension than increasing values of waist circumference, especially among subjects with normal weight. This intriguing finding needs further investigation. Third, several abnormalities⁶ have been implicated in the development of hypertension in overweight and obese individuals. However, it is unclear whether the same factors are involved in the increased risk of hypertension associated with incremental values of BMI within the normal range. Future research is needed to investigate potential mechanisms in this specific setting. Finally, according to this article⁶ and previous data,¹ the risk of developing future hypertension seems to increase substantially from BMI values of ~22–23 kg/m². Thus, although the achievement of a BMI value <25 kg/m² remains a primary and difficult goal, even lower values could be counseled.

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