Body mass index may determine which blood pressure treatments work best

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According to new research published Online First in the Lancet, body mass index may influence which blood pressure medications work best at reducing the major complications of high blood pressure (strokes, heart attacks, and death). The findings suggest that diuretic drugs seem to be a reasonable choice for obese patients, but significantly increase the risk of cardiovascular events in non-obese individuals. Calcium channel blockers, meanwhile, work equally well in people in all weight groups, including lean individuals.

"These findings could change the way high blood pressure (hypertension) is treated and should be of practical help to clinicians in selecting the type of combination treatment most likely to benefit individual patients", says Michael Weber from the State University of New York's Downstate Medical Center who led the research. "Importantly, they suggest that hypertension in obese and lean patients is probably mediated by different forms of underlying disease processes."

Weber and colleagues conducted a subanalysis of the international ACCOMPLISH trial that compared the impact of two single-pill drug combinations—benazepril (ACE inhibitor) plus the diuretic hydrochlorothiazide, and benazepril plus amlodipine (calcium channel blocker)— on the long-term health of people with high blood pressure at high risk of heart disease.

The researchers grouped 11482 participants according to three body mass index categories (normal weight, overweight, and obese) to assess

the effects of [body mass index](link) and different [treatment regimens](link) on heart-related events (cardiovascular deaths, hearts attacks, and strokes).

The analysis showed that in people assigned to the diuretic combination a normal BMI was associated with significantly worse outcomes—a 68% higher event rate—than a high BMI.

In contrast, the benazepril and amlodipine combination was equally effective across all weight categories. What is more, compared with the diuretic regimen, the combination of benazepril and amlodipine significantly reduced heart-related events in normal weight (difference 43%) and overweight (24%) individuals.

Both treatments worked as well in obese people, with no major difference in outcomes recorded between the two regimens.

Weber speculates that, "Higher cardiovascular event rates in lean patients reported in hypertension clinical trials might have reflected the types of antihypertensive treatments that were used. Diuretic-based regimens seem to be a reasonable choice in obese patients in whom excess volume provides a rationale for this type of treatment, but thiazides are clearly less protective against cardiovascular events in patients who are lean."

However, he cautions, "Our observations might not be fully generalisable to all types of treatments…since they were driven predominantly by findings in one (the diuretic-based) of our two treatment groups."

Contrary to the conclusion of Weber and colleagues, Franz Messerli from Columbia University College of Physicians and Surgeons in New York and Sripal Bangalore from New York University School of Medicine, New York argue in a linked Comment that diuretic-based regimens are not a suitable choice in obese patients. They conclude, "If

the indication is hypertension, amlodipine-based treatment should be used irrespective of body size. Conversely, if the indication is prevention or treatment of left-ventricular dysfunction, a diuretic based regimen should be used, again irrespective of body size. This strategy relegates diuretics to third-line agents for treatment of hypertension, except in patients at risk of heart failure—a position recognised in the latest UK guidelines."

More information: www.thelancet.com/journals/lan … (12)61343-9/abstract

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