Intensive blood pressure lowering benefits older patients with hypertension

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Aggressive blood pressure treatment in older hypertensive patients lowers the incidence of cardiovascular events compared to standard therapy, without increasing adverse outcomes. That's the finding of late

breaking research presented in a Hot Line session today at ESC Congress 2021.

More than one billion people have hypertension worldwide. The overall prevalence in adults is around 30–45%, rising to more than 60% of people over 60 years of age. As populations age, adopt more sedentary lifestyles, and increase their body weight, the prevalence of hypertension worldwide will continue to rise. Elevated blood pressure was the leading global contributor to premature death in 2015, accounting for almost 10 million deaths.

Trials of blood pressure lowering in older adults with hypertension have yielded mixed results and guidelines recommend different target levels. The STEP study was conducted to provide new evidence on the benefits of blood pressure lowering in older patients with hypertension. Specifically, it examined whether intensive treatment targeting a systolic blood pressure (SBP) below 130 mmHg could reduce the risk of cardiovascular disease compared with a SBP target below 150 mmHg.

The study enrolled 8,511 older essential hypertensive patients from 42 clinical sites in China. All participants were aged 60–80 years, with a SBP of 140–190 mmHg during three screening visits or taking antihypertensive medication. Patients with prior stroke were excluded.

Participants were randomly assigned to 1) intensive treatment (SBP target below 130 mmHg but no lower than 110 mmHg); or 2) standard treatment (SBP target 130–150 mmHg). The primary outcome was a composite of stroke, acute coronary syndrome, acute decompensated heart failure, coronary revascularisation, atrial fibrillation, or death from cardiovascular causes. Secondary outcomes included the components of the primary endpoint, death from any cause, major adverse cardiac events, and renal outcomes (a decrease in renal function or the development of end-stage renal disease).

All participants were scheduled for follow-up at 1, 2, and 3 months, and every 3 months thereafter until month 48 or until the end of study. The same validated office blood pressure measurement device was used at all collaborating hospitals, which minimized investigator bias in determining blood pressure during the follow-up clinic visits.

One important strength of the trial was that home blood pressure was monitored as an adjunct to office measurements via a smartphone-based application. At study entry, all participants were provided with the same validated automatic home blood pressure monitor. The monitor's Bluetooth function enabled patients to upload readings to a data center via the app. If blood pressure was not measured regularly and transmitted to the data center, the app sent reminders via WeChat. A monthly report on home measurements was sent to doctors to improve the efficiency of blood pressure control during the trial.

During a median 3.34-year follow-up period, the average decrease in SBP from baseline was 19.4 mmHg in the intensive treatment group and 10.1 mmHg in the standard treatment group. Average SBP reached 126.7 mmHg and 135.9 mmHg in the intensive and standard groups, respectively, with an average between-group difference of 9.2 mmHg.

A total of 196 primary outcome events were documented in the standard treatment group (4.6%) compared to 147 events in the intensive treatment group (3.5%), with a relative risk reduction of 26% (hazard ratio with intensive treatment 0.74; 95% confidence interval [CI] 0.60–0.92).

Regarding secondary outcomes, intensive treatment was associated with a 33% lower relative risk of stroke (95%CI 0.47–0.97) and a 33% lower relative risk of acute coronary syndrome (95%CI 0.47–0.94). Incidence of safety outcomes and renal outcomes did not differ between the two groups except hypotension, which occurred in 146 (3.4%) and 113

(2.6%) patients in the intensive and standard treatment groups, respectively (p=0.03).

Principal investigator Professor Jun Cai of the Chinese Academy of Medical Sciences, Beijing, China said that "active control of SBP to below 130 mmHg in older hypertensive patients, as compared with below 150 mmHg, resulted in a lower incidence of major cardiovascular events, with no increase in renal injuries. Home blood pressure monitoring more accurately reflected long-term fluctuations in blood pressure than office measurements."

More information: Weili Zhang et al, Trial of Intensive Blood-Pressure Control in Older Patients with Hypertension, *New England Journal of Medicine* (2021). DOI: 10.1056/NEJMoa2111437

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