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BENEFITS OF INTENSIVE VS. STANDARD BLOOD PRESSURE CONTROL ON DEMENTIA DEVELOPMENT

Alzheimer's disease and dementia is projected to affect 115 million people by 2050 and there are currently no treatment strategies that prevent or delay this disease. Hypertension has been suggested as a modifiable risk factor for the development of dementia; however, there is conflicting evidence regarding the development of dementia in patients adhering to intensive blood pressure control. This issue of *CLIPs* briefly summarizes a randomized control trial that was designed to determine the effect of intensive blood pressure (BP) control (as defined by a systolic blood pressure (SBP <120 mmHg)) on the rate of dementia and mild cognitive impairment compared to the standard blood pressure goal of less than 140 mmHg. If you need further information, please contact the Center for Healthcare Innovation and Patient Outcomes Research (CHIPOR) at chipor@samford.edu.

SPRINT MIND Investigators. Effect of intensive vs. standard blood pressure control on probable dementia. A randomized control trial. JAMA. 2019; doi:10.1001/jama.2018.21442.

Introduction

- Observational studies have shown some association between low blood pressure and the development of cognitive impairment.
- The Systolic Blood Pressure Intervention Trial (SPRINT) was designed to evaluate the effect of more intensive BP control on cardiovascular (primary endpoint), renal and cognitive outcomes in patients with diabetes or previous strokes.
- Standard blood pressure control (<140 mmHg) and intensive blood pressure control (<120 mmHg) were evaluated to determine the differences in cognitive impairment between the two approaches.

Methods

- Patients were included in the study if they were aged ≥50 years and had a SBP between 130 and 180 mmHg at the initial screening.
- Patients had an increased cardiovascular risk, defined by: clinical or subclinical cardiovascular disease, chronic kidney disease, or a Framingham Risk Score of 15% or greater or if they were aged 75 years or older.
- Patients in nursing homes, those using medications for dementia, and those with prevalent diabetes mellitus or history of stroke were excluded.
- All antihypertensive agents were included and provided at no cost to particiants.
- Assessment of cognitive status was completed via a 3-step process.
- Planned cognitive assessments were scheduled for baseline, 2 and 4 years of follow up, and at study closeout.
- Cardiovascular effects showed benefit with intensive BP control and the trial was stopped early.
- Cognitive measures were completed at the study closure.
- The primary cognitive outcome was occurrence of probable dementia. Secondary outcomes included occurrence of mild cognitive impairment (MCI) and a composite outcome of occurrence of probable dementia or MCI.

Results

- A total of 9361 patients were randomized during the study period.
- The mean age was 67.9 years and 28.2% of patients were aged 75 years or older.
- Approximately 35.6% were female, 30% were black, and 10.5% were Hispanic.
- Baseline mean SBP was 139.7 mmHg (SD, 15.6 mmHg).
- Up until the decision to stop the trial, there was a difference between mean SBP between groups (SPB, 121.6 mmHg in the intensive treatment group and 134.8 mmHg in the standard treatment group; 13.3 mmHg difference (95% CI, 12.3-14.3 mmHg).

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Results (continued)

- During the close out period, the between group differences were not as large (10.5 mmHg; 95% CI, 9,6-11.5 mmHg). As time from stopping the trial increased, the between group differences were further reduced.
- The incidence of dementia and MCI by treatment group is depicted in Table 1.

Table 1: Incidence of Probable Dementia and Mild Cognitive Impairment by Treatment Group

	Treatment group					
	Intensive		Standard			
Outcome	**No. with outcome / person-years**	**Cases per 1000 person-years**	**No. with outcome / person-years**	**Cases per 1000 person-years**	**Hazard Ratio (95% CI)**	**P-value**
Probable dementia	149 / 20,569	7.2	176 / 20,378	8.6	0.83 (0.67-1.04)	.10
Mild cognitive impariment	287 / 19,690	14.6	353 / 19,281	18.3	0.81 (0.69-0.95)	.007
Cmposite of mild cognitive impairment or probably dementia	402 / 19,873	20.2	469 / 19,488	24.1	0.85 (0.74-0.97)	0.01

Conclusions

- Intensive BP control to target a BP < 120 mmHg was not associated with a reduction in the incidence of probable dementia compared to standard BP goals.
- The study was discontinued early; therefore, the study may not have been adequately powered to detect differences in the groups in the given time frame with the number of patients who were included.
- After discontinuation of therapy, antihypertensive medications were not provided by the study sponsor.
- Additional studies need to be conducted to adequately determine the effect of intensive blood pressure control on the development of dementia.

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