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Further Discussion on the Treatment of Hypertension

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Further Discussion on the Treatment of Hypertension

1. [Hermida RC, Ayala DE, Mojón A, et al. Influence of circadian time of hypertension treatment on cardiovascular risk: results of the MAPEC study. *Chronobiol Int.* 2010;27:1629–1651.](#)

Background:

A patient's blood pressure changes throughout the day, in sync with the rest-activity cycle. The body's circadian rhythm contributes to fluctuation in blood pressure and affects the body's response to antihypertensive medications. Traditionally, blood pressure medications are prescribed to be taken in the morning. Patients on more than 1 blood pressure medication usually take their medications all at once. Recent studies have shown that sleep time blood pressure may be a more important factor than daytime blood pressure readings in fatal and nonfatal cardiovascular disease events.

Study type:

Randomized controlled trial, results evaluated from Ambulatory Blood Pressure Monitoring for Prediction of Cardiovascular Events Study (MAPEC)
2201 subjects diagnosed with untreated or resistant hypertension (awake BP mean greater than or equal to 135/85, asleep BP mean greater than or equal to 120/70), 1109 patients allocated to treatment in the morning, 1092 allocated to take ≥ 1 medication at bedtime. Blood pressure was measured for 48 hours annually for a mean follow up of 5.6 years

Results:

- Differences between groups for mean BP while awake were not significant $p=0.546$
- Proportion of patients with non dipper blood pressure was lower in bedtime group than morning group 34% versus 62% $p<0.001$
- Relative risk of major CVD events (death, MI, ischemic stroke, hemorrhagic stroke) 0.39 $p<0.001$ when greater than or equal to one medication at bedtime was taken versus all medications ingested in the morning

Conclusions:

- Patients experienced better blood pressure control during sleep while taking at least one or more blood pressure medications at bedtime
- Major CVD events were lower in patients who took one or more of their blood pressure medications at bedtime NNT 30 over 5.6 years
- In comparison- patients with moderate to severe hypertension (SBP > 160), NNT for a patient taking low dose thiazide diuretics for 5 years was 20 in the primary prevention of cardiovascular events ¹

2. [Webb AJ, Fischer U, Mehta Z, Rothwell PM. Effects of antihypertensive-drug class on interindividual variation in blood pressure and risk of stroke: a systematic review and meta-analysis. *Lancet.* 2010 Mar 13;375\(9718\):906-15.](#)

Background:

Studies show an increase in 20 mm Hg of SBP doubles the risk of stroke in individuals from 40-69 years of age. All hypertensive drugs have been shown to decrease stroke and cardiovascular events with decreasing mean blood pressure. However, class variations may exist. Previous studies showed CCB decreased stroke risk more than what is expected from simply decreasing blood pressure, hence there may be more to benefit from certain antihypertensive agents than just the lowering of mean blood pressure.

Study type:

Meta-analysis and systematic review

Study evaluated 398 RCT which studied changes in interindividual variance in blood pressure at the highest dose of different antihypertensive drugs with mean SBP measured at one year in

each study. Eight drug classes were evaluated: dihydropyridine CCB, non-dihydropyridine CCB, thiazide and thiazide like diuretics, ACEi, beta blockers, ARB, alpha1 blockers

Results:

-Interindividual variation in SBP was decreased by CCB (VR 0.81, $p < 0.0001$), non-loop diuretics (0.97, $p = 0.007$), but increased by ACEi (1.08, $p = 0.008$), ARB (1.16, $p = 0.0002$), beta blockers (1.17, $p = 0.0007$) (each drug class was compared to all other drug classes)

-A significant reduction in stroke with lower SD for systolic blood pressure was shown $p = 0.012$

Conclusions:

-CCB and thiazide diuretics decrease interindividual variation of blood pressure

-Blood pressure medications which decreased interindividual variation showed statistically significant reduction in stroke risk

REFERENCES:

1. Wright JM, Musini VM. First-line drugs for hypertension. *Cochrane Database Syst Rev.* 2009;(3):CD001841.