CONCEPTS IN HYPERTENSION

A Journal Article-Based Approach to Understanding the Clinical Aspects of Hypertension

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Article of Interest

Pareek, A et al. Efficacy of Low Dose Chlorthalidone and HCTZ as Assessed by 24hr Ambulatory BP Monitoring. Journal of the American College of Cardiology. 2016. (Click to Access)

Context and Study Objective

Hydrochlorothiazide is the most commonly prescribed anti-hypertensive in the U.S. despite being approximately half as potent as and with a shorter duration of action than chlorthalidone. This study sought to compare the degree of anti-hypertensive effect and duration of action of these agents.

Main Outcome

Change in mean 24hr ambulatory blood pressure (ABPM) over 12 weeks. Secondary endpoints included changes in daytime and night time pressures.

Design, Setting, and Participants

Patients were randomized in a double-blind fashion to morning doses of chlorthalidone 6.25 mg, HCTZ 12.5 mg, or HCTZ continuous release (not to be discussed). Those with diabetes, chronic kidney disease, "recent cardiovascular disease," or BP>160/100 mm Hg were excluded. The study was conducted in India.

Results

-One hundred fifty patients were screened with 20 ultimately randomized to each arm. Mean age was 44; mean pressure was 148/93 mm Hg.

-Table: By ABPM, reductions in mean systolic and diastolic pressure as well as daytime and nighttimes pressures were greater in the chlorthalidone than HCTZ group. The difference was most pronounced during the nighttime hours

Reduction in Blood Pressure by Agent and Time Interval

	ΔBP (Sys/Dia)	ΔDay (Sys/Dia)	ΔNight (Sys/Dia)
HCTZ	6.0/4.2	7.2/4.7	4.9/3.6
Chlorthalidone	11/7.8	12/8.7	10/6.8

-Figure: The anti-hypertensive effect of chlorthalidone persisted throughout the overnight and early morning hours whereas that of HCTZ waned. Similar trends were noted for diastolic pressures.

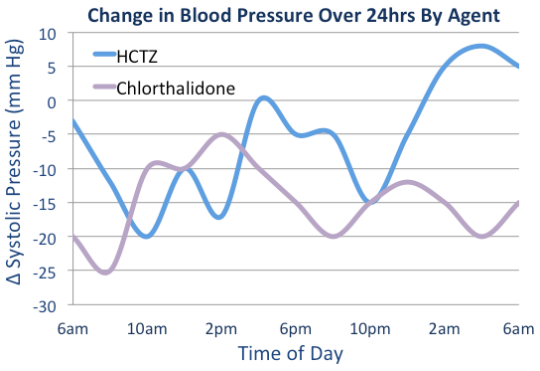
-Hypokalemia occurred in 1 patient in each arm. No episodes of hyponatremia or gout were noted.

Clinical Perspective

-As will be presented in the December 2016 issue, low dose therapy has considerable anti-hypertensive effect.

-Chlorthalidone is both more potent and longer acting than HCTZ. While the dose of HCTZ can be increased to match its potency, HCTZ must be given twice/day to ensure the 24hr anti-hypertensive effect of chlorthalidone.

-Since the duration of action of HCTZ is well under 24hrs, its anti-hypertensive effect wanes in the early morning hours, the time at which BP is highest and the most cardiovascular events occur.



-Study limitations include the small number of patients randomized and the large standard deviation around a given BP reduction. The exclusion criteria are clinically relevant.

-Despite the above limitations, the results are consistent with the existing literature and generalizable to most hypertensives (apart those with a GFR < 30 cc/min). I rarely use HCTZ and favor chlorthalidone or indapamide as my thiazide of choice.

-Further analysis can be found in the accompanying editorial I coauthored.

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