Short-term blood pressure response to mineralocorticoid-receptor blockade in aldosteronism: Primary hyperaldosteronism versus aldosterone-associated hypertension (low-renin hypertension)

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Introduction
Primary aldosteronism is a common cause of secondary hypertension. Some authors consider aldosteronism to be a spectrum, ranging from aldosterone-associated (or low-renin) hypertension (AAH) to primary hyperaldosteronism (PHA) due to bilateral hyperplasia (BAH), with aldosteronoma as a separate entity. Thus, the blood pressure (BP) response to mineralocorticoid-receptor blockade (MRB) could be similar in both AAH and BAH.

Material and methods
We conducted a retrospective analysis of 60 patients with hypertension secondary to aldosteronism. Screening was performed per Endocrine Society Guidelines, considering screening positive with an aldosterone (pg/ml)-to-direct renin (pg/ml) ratio (ARR) ≥ 25. We used the 25 mg Captopril Test (CAP) as the diagnostic test for PHA, with patients on doxazosin and/or long-acting verapamil treatment. We compared the office BP response to MRB (50-100 mg of spironolactone or 200-300 mg of eplerenone) used as sole BP medication following 2 weeks of therapy in patients with PHA versus AAH. BP: mmHg. Renin and aldosterone were determined by RIA (CIS-BIO). Normal renin: 3-33 pg/ml. Statistical analysis: Mann-Whitney U, Student T, Wilcoxon, and Chi-square Tests. SPSS 15.

Results
Baseline Characteristics of patients with HAP versus AAH: 28/60 versus (vs) 32/60 patients, 67.9% vs 75% women, mean age 55.4 (SD 2.7) vs 53.9 (SD 9.9).
Initial number of blood-pressure-lowering drugs: 2 [IQR 1-2] vs 1 [IQR 1-2]. Resistant hypertension: 6/28 (21.4 %) vs 2/32 (6.3%). Major cardiovascular events and/or renal failure: 8/28 (28.6%) vs 5/32 (15.6%) p=0.06.
Hypokalemia: 5/28 (17.8%) vs 0/32 (0%) p=0.003. Serum Potassium (S K+) mmol/L: 4.0mmol/L (SD 0.6) vs 4.2 (SD 0.5) (N= 3.5-3.5), Serum Creatinine (S Cr) mg/dl: 1.0 (SD 0.5) vs 0.89 (SD 0.3).
Pre-MRB Office Systolic BP (SBP): 154 (SD 22.6) vs 151 (SD 16.6), Office Diastolic BP (DBP): 90 (SD 14.4) vs 90 (DS 12.1).

RESPONSE TO 2 weeks of MRB:
SBP 128 (SD 15.7) vs 123 (SD 11.8), DBP: 77 (SD 10.7) vs 75(SD 9.1), S K+: 4.6(SD=0.5) vs 4.7 (SD 0.5), S Cr: 1.14 (SD 0.7) vs 1.00 (SD 0.4).

The descent in both SBP and DBP was significant in PHA (both p <0.001) as in AAH (both p <0.001). No significant differences were found in SBP (p = 0.569) nor DBP (p = 0.389) reductions following MRB in PHA vs AAH.

Conclusions
The Captopril Test can identify both patients with Primary Hyperaldosteronism and Aldosterone-related hypertension. Both groups present a similar, dramatic and rapid blood-pressure response to high-dose mineralocorticoid-receptor blockers, suggesting that AAH patients should be identified, and the same protocol for medical therapy used in both PHA and AAH. Our results support the hypothesis that aldosterone-induced hypertension is a continuum.