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## Cardiovascular Endocrinology

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### ***To Repeat or Not to Repeat: The Question of Aldosterone and Renin Variability***

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Plasma aldosterone concentration (PAC), renin levels and aldosterone-renin ratio (ARR) are used to screen for primary aldosteronism (PA). A recent study (Yozamp et al. Hypertension 2021) reported substantial intraindividual variability of PAC and ARR (using plasma renin activity) in the context of usual antihypertensive therapy. The intraindividual variability of PAC and direct renin concentration (DRC), a more widely used measurement of renin, in the absence of interfering medications is unknown but important where a single ARR is used to screen for PA.

The aim of this study was to evaluate the intraindividual variability of PAC, DRC and ARR in a cohort of patients with and without PA. Patients who attended an Endocrine Hypertension Service from May 2017 to July 2021 with at least two ARR measurements off interfering medications were retrospectively evaluated. While the measurements were performed at several hospital and community laboratories, the same analyser was used. PA was confirmed using the seated saline suppression test following an abnormal ARR >70 pmol/L: mU/L. PAC and DRC variability was calculated as coefficient of variation (CV=standard deviation/mean×100) and percent difference (PD=difference between highest and lowest values/mean×100).

A total of 223 patients were analysed (55% female, median age 52 years), including 162 with PA (25% with unilateral disease). Significant variability in both PAC and DRC was observed in the PA group (CV: 24%, 41%; PD: 46%, 76% respectively) and non-PA group (CV: 22%, 40%; PD: 38%, 65% respectively), which was higher than the assays' analytical variability. The ARR was also highly variable within individuals, in both the PA group (CV: 42%; PD: 74%) and non-PA group (CV: 37%; PD: 61%). Variability was not significantly different between PA subtypes, and persisted irrespective of age, gender and degree of hypertension. Sixty-two patients (39%) with PA could have had a missed diagnosis if the ARR had not been repeated, i.e., had at least one ARR <70 pmol/L: mU/L, while 28 (46%) without PA had at least one abnormal ARR > 70.

Intraindividual variability in PAC, DRC and ARR occurs in a significant number of patients being investigated for PA. These results support the need for at least two ARR on separate occasions before PA is excluded or further investigated.

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