Case Detection of Primary Aldosteronism

Screening beyond the Aldo/Renin-Ratio

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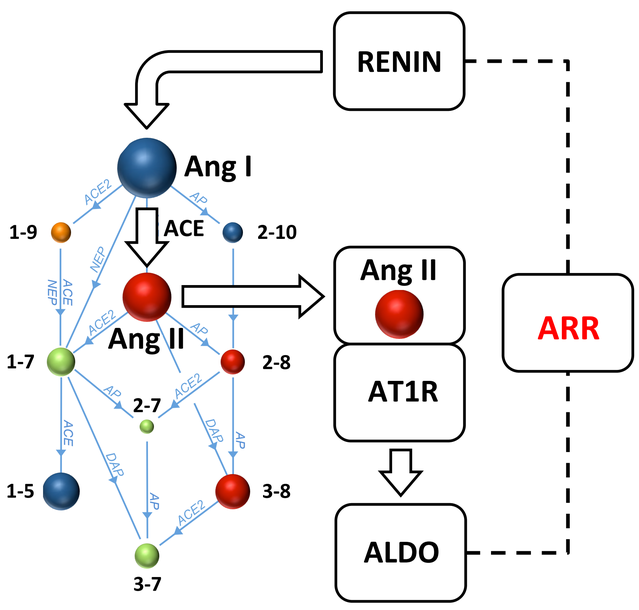
Background

Primary aldosteronism (PA) is severe form of hypertension characterized by a strongly increased aldosterone secretion mediated by adenomas or other forms of adrenal hyper-activity. Once detected, PA can be usually cured by either surgical intervention or by appropriate pharmacologic treatments. This is also reflected in clinical guidelines of Endocrine Societies in Europe and the US, suggesting extensive PA screening activities among resistant hypertensive patients. The incidence of PA among hypertensive patients varies strongly between different studies, which is in part caused by the complex state-of-the-art testing procedure that unfortunately is far away from being a versatile PA screening tool. Despite strong limitations regarding selectivity, sensitivity and the interference with multiple anti-hypertensive drugs, the aldosterone-renin-ratio (ARR) is widely used for PA case detection. However, there is still a strong demand for accurate and reliable and patient friendly PA case detection. The use of novel and more accurate technologies for quantification of aldosterone and renin activity might help to improve the power of the ARR as a diagnostic tool for PA. However, there is a big need for a versatile PA screening assay that doesn't interfere with anti-hypertensive treatments and therefore allows the clear identification of PA patients without complex corrections and adaptions being necessary and without increasing the patient's cardiovascular risk in the course of the diagnostic process. The Aldosterone-to-Angiotensin II-Ratio (AA2-Ratio) is a novel and promising tool providing improved diagnostic power for PA screening among hypertensive patients on treatment. It is based on the quantification of physiologically active angiotensin II and aldosterone and therefore provides a direct readout for detecting angiotensin II independent aldosterone secretion.

Aldosterone/Renin-Ratio (ARR)



Aldo/Renin-Ratio
Diagnostic Procedure

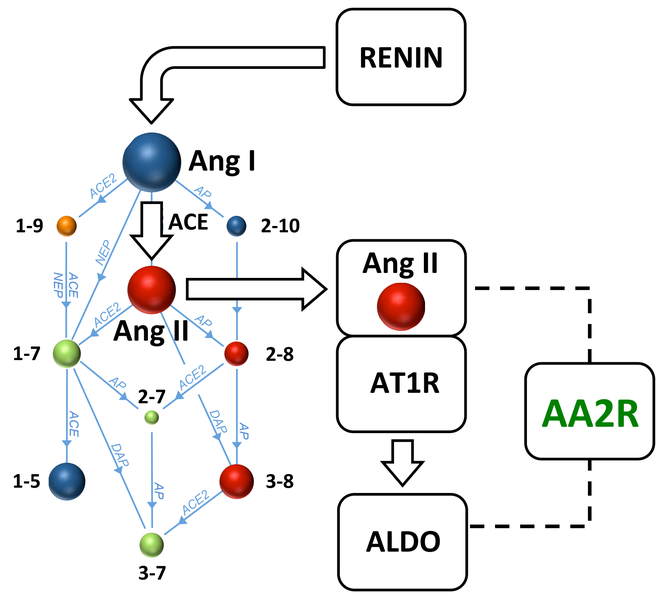
- ➔ Screening Test
- ➔ Drug Wash-Out Phase
- ➔ Off-Drug
- ➔ Confirmation-Testing (SIT)
- ➔ Aldosterone-Renin-Ratio (pre and post Test)
- ➔ Diagnosis (AVS)
- ➔ Classification
- ➔ Therapy

Drug Interferences
➔ False Neg/Pos

Off-Drug Phase
➔ Cardiovascular Risk

Confirmation Testing
➔ Cost and Time Effort

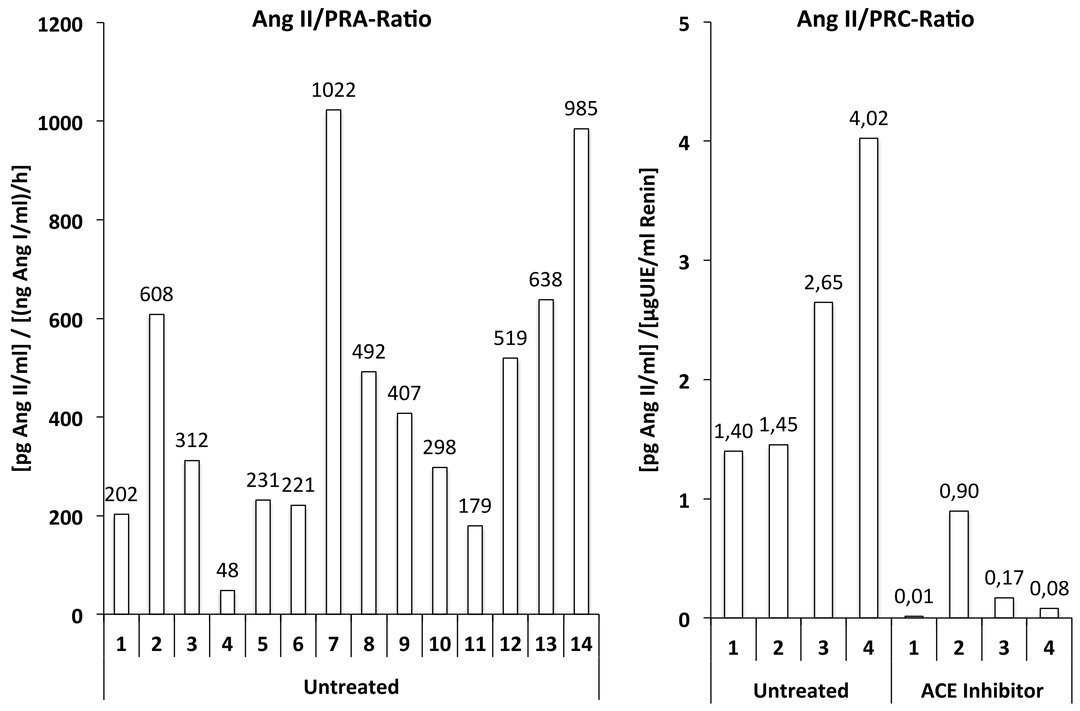
Aldosterone/Angiotensin II-Ratio (AA2-Ratio)



Novel Approach: AA2-Ratio

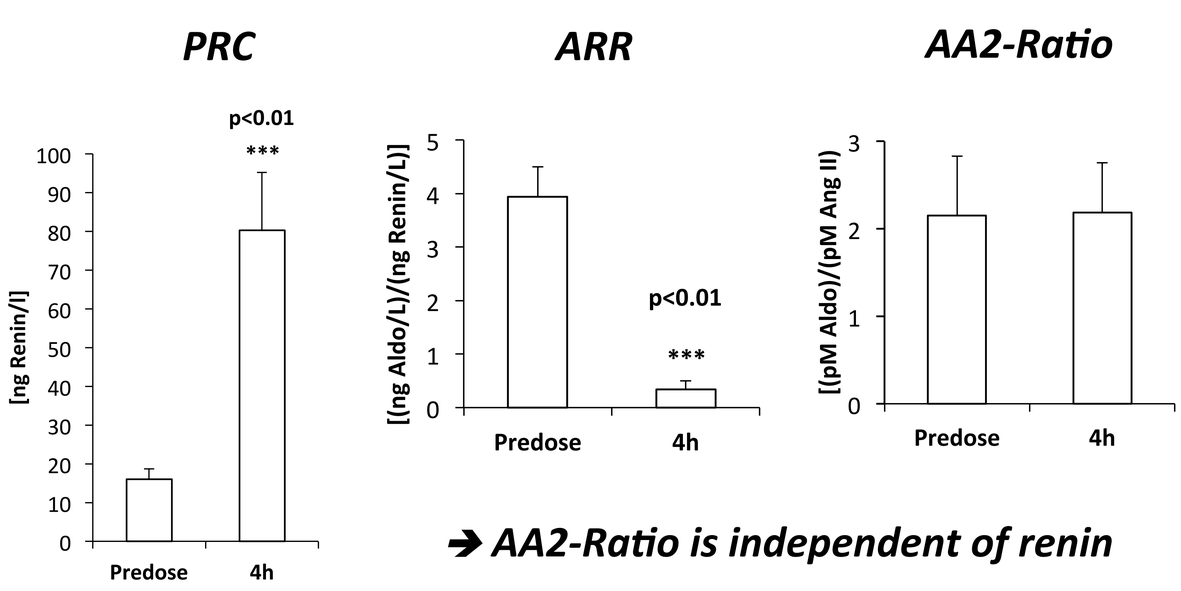
- ➔ Independent of Drug Treatments
- ➔ Direct link between Ang II and Aldo
- ➔ Reduced Variation
- ➔ Enhanced Performance in Screening

Renin => Angiotensin II ?



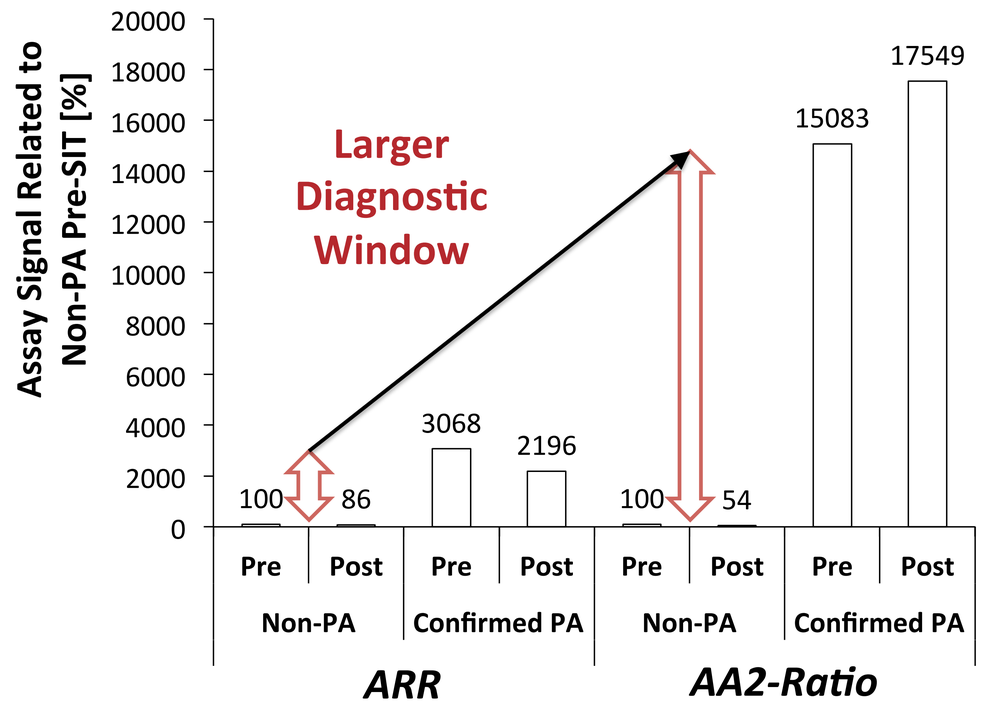
➔ ***Poor correlation between renin and angiotensin II***

Drug Interference (ACE-Inhibitor)



➔ ***AA2-Ratio is independent of renin***

Diagnostic Window: ARR vs. AA2-Ratio



Conclusion

The AA2-Ratio for PA-Case Detection:

- ➔ Independent of RAAS interfering drugs!
- ➔ Reduction of cardiovascular risk in diagnostic process!
- ➔ Larger diagnostic window!
- ➔ Increased sensitivity and specificity?
- ➔ No confirmation testing? (cost reduction)

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