

Short communication

## Ambulatory Arterial Stiffness Index (AASI) and Antihypertensive Drug Effects: A Study with Spironolactone

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### Background

Patients with essential hypertension have shown increased arterial stiffness[1]. ABPM allows us to obtain AASI (Ambulatory Arterial Stiffness Index) through a mathematical formula (1-slope DBP/SBP)[2-4]

This index has many physiologic components (one of them is arterial stiffness), correlates well with Pulse Wave Velocity (PWV), and shows good prognostic value in normal and hypertensive populations: with increased AASI values, worse CV prognosis[5-12].

### AASI is a clear CV risk marker

Enalapril 10 mg once a day in the morning, is the commonest initial treatment in Argentina. And after 30 days, in patients who are resistant (not controlled) with enalapril, is used to add a second drug. We choose to add Spironolactone as a second drug. Spironolactone is an anti-aldosterone diuretic, with antifibrotic properties, not enough studied in hypertensives in the short term [13].

### Objective

To analyze the effect of Spironolactone add to Enalapril, on AASI, in patients with stage 1 essential hypertension, treated during 3 months with once-day morning doses.

### Materials and Methods

163 patients with essential hypertension were included. Patients were classified as stage 1 (ESH 2007), with Aldosterone: Renin Score <20, they were on Enalapril 10 mg at least 30 days, nor receiving any other concomitant pharmacological agent capable of inducing changes in arterial stiffness, and

did not undergo any lifestyle changes in the last month. All patients had ambulatory day BP greater than 135 and/or 85 mmHg (SBP and DBP). Mean age was 56.6 (54-65) years old, 63 patients were male, and BMI was 27.4 (25-29). We added Spironolactone 50 mg/d in morning dose for 3 months. AASI: 1-slope DBP/SBP[14-17].

Two 24-hour ABPM recordings (Spacelabs 90207) were performed pre and post-Spironolactone, with at least 70 valid measurements each. Patients received Spironolactone 50 mg during 12 weeks, always as a once-daily morning dose, until the moment of the final ABPM recording.

A paired T-Test was used for statistical analysis and p<0.05 was considered statistically significant.

### Results

	Office BP mmHg	ABPM 24 hs mmHg	ABPM Day mmHg	ABPM Night mmHg	ABPM Standard Deviation Day mmHg	HR Day beats /min	AASI %
Basal	148/94	138/90	142/92	130/82	13.4/9.8	76.4	0.46±0.10
3 months	134/86	132/84	134/86	126/72	11.8/8.8	77.6	0.34±0.12
p<	0.03/0.04	0.02/0.03	0.05/0.05	0.05/0.04	n.s./n.s.	n.s.	0.03

Adverse effects: were mild, 17 patients suffered headaches, kalemia increased from 4.04 to 4.44 mEq/l, and creatinine from 9.18 to 9.42 mg%, 14 patients developed a mild dry cough.

### Conclusion

In basal study (enalapril-treated but not controlled patients)

AASI values were high (normal values are expected < 0.45 for this age)(14).

Spironolactone-induced a significant BP decrease, in office and ambulatory measurements, and tends to reduce BP variability (Standard Deviation) and Heart Rate.

The AASI (Ambulatory Arterial Stiffness Index) was reduced to 0.34, within normal values, after only 3 months of treatment. We speculate that these change could be attributed to vascular early antifibrotic action [18].

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