



INCREASED PULSE WAVE VELOCITY INDICATES PRESENCE OF CORONARY ARTERY DISEASE IN PATIENTS WITH ABDOMINAL AORTIC ANEURYSMS

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INTRODUCTION

- Pulse wave velocity (PWV) is a valid, clinically feasible, measure of arterial stiffening and a strong predictor of future cardiovascular events and all-cause mortality in patients with coronary artery disease (CAD).
- The aim of the present study was to assess aortic elastic properties in patients with abdominal aortic aneurysms (AAA) with and without coexisting CAD.

METHODS

- We enrolled **95 patients with AAA** eligible for interventional repair (European Society for Vascular Surgery Guidelines) and **73 patients with CAD**.
- A group of **29 healthy subjects** served as controls (HC).
- PWV was measured in all participants using Complior method.
- The presence of CAD was documented by at least one coronary stenosis $>70\%$ at coronary angiography.

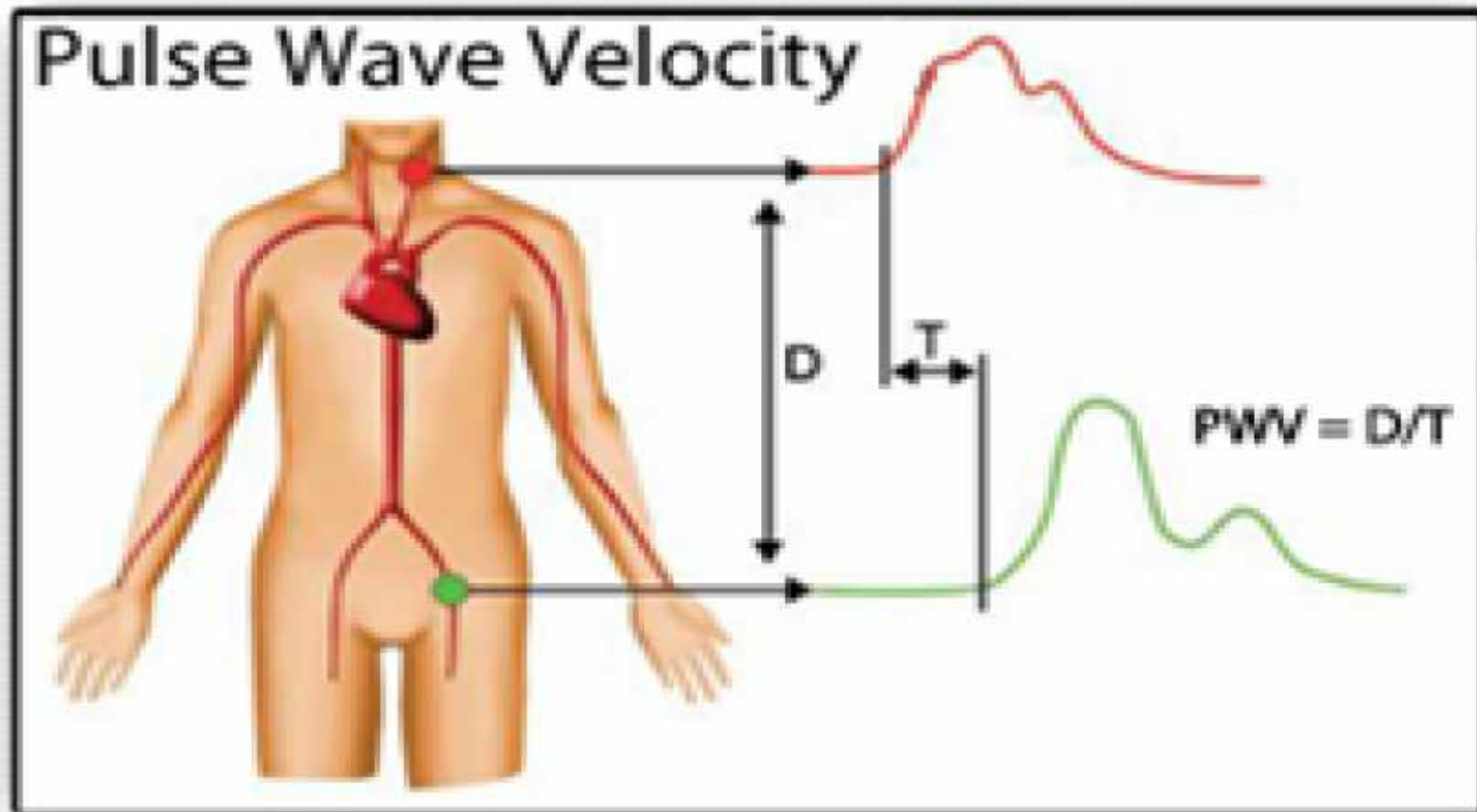
	AAA group (n=95)	CAD group (n=73)	Control group (n=29)
Age (years)	72±4	69±8	69±5
CAD (n)	41 (43.15%)	73 (100%)*	-
Diabetes (n)	18 (18.94%)	21 (28.76%)	-
Smoking (n)	36 (37.89%)	10 (13.69%)*	10 (34.48%)
Statins (n)	43 (45.26%)	61 (83.56%) [¶]	9 (31.03%) [#]
Anti-hypertension medications (n)	61 (64.21%)	57 (78.08%)	20 (68.96%)
BMI (kg/m²)	28.98±4.23	29.36±5.79	27.9±3.5
Waist-hip ratio	0.97±0.12	0.98±0.15	0.97±0.15
SBP (mmHg)	135±18	131±19	132±16
DBP (mmHg)	84±11	78±12	82±9
Mean BP (mmHg)	101±9	92±10	99±10
Total cholesterol (mg/dl)	218±31	184±48	229±42

*p<0.001 AAA group vs. CAD group; [¶] p<0.05 AAA group vs. CAD group; [#] p<0.05 CAD group vs. Control group.

METHODS

- The carotid-femoral PWV was assessed by measuring the pulse transit time and the distance between the two recording sites [PWV (m/s) = travel distance/transit time (m/s)].
- A simultaneous recording was performed by two pressure-sensitive transducers of two different pulse waves based over the right common carotid artery and the right femoral artery, respectively.
- Measurement of the distance between the transducers over the body surface allowed obtaining PWV.

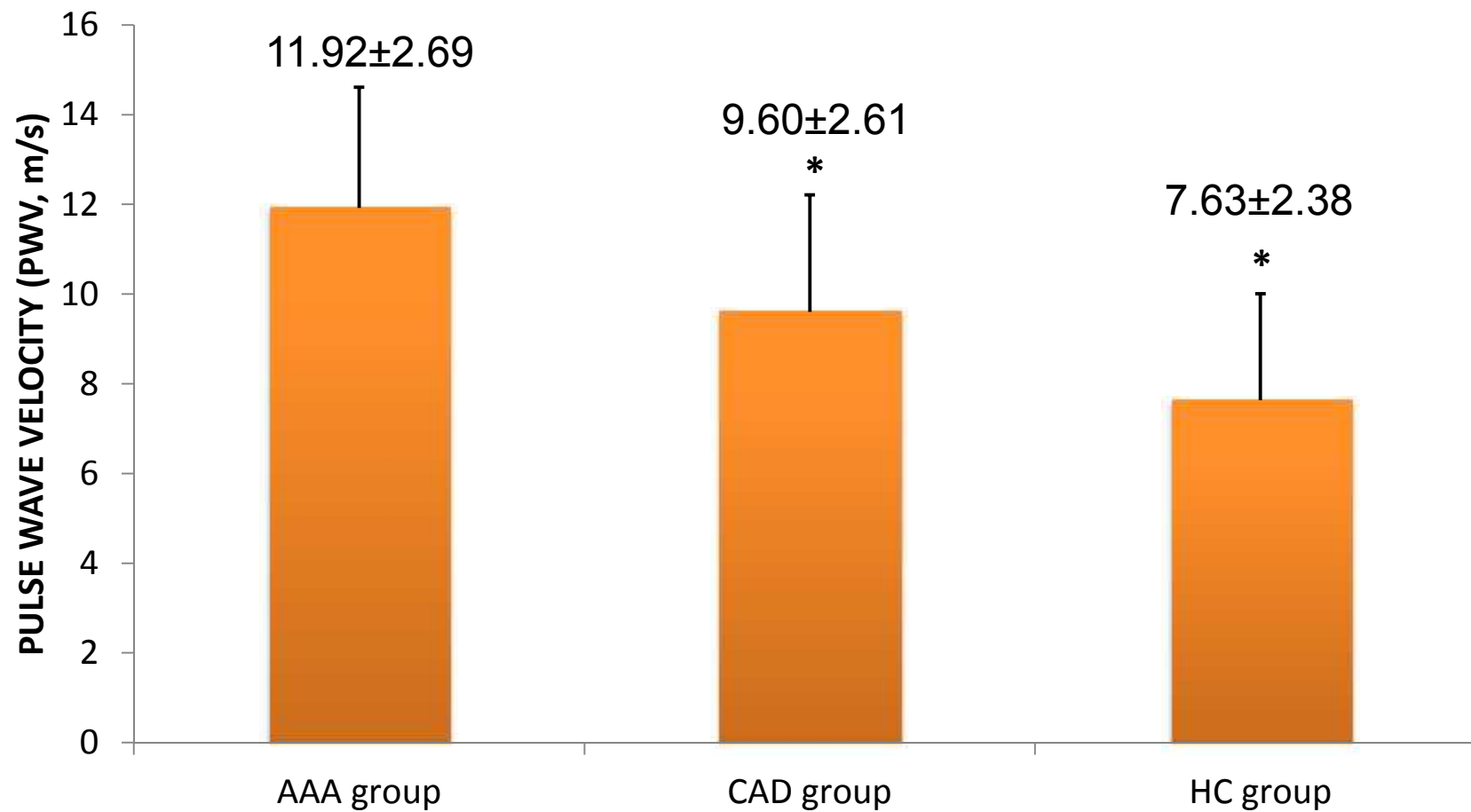
METHODS



RESULTS

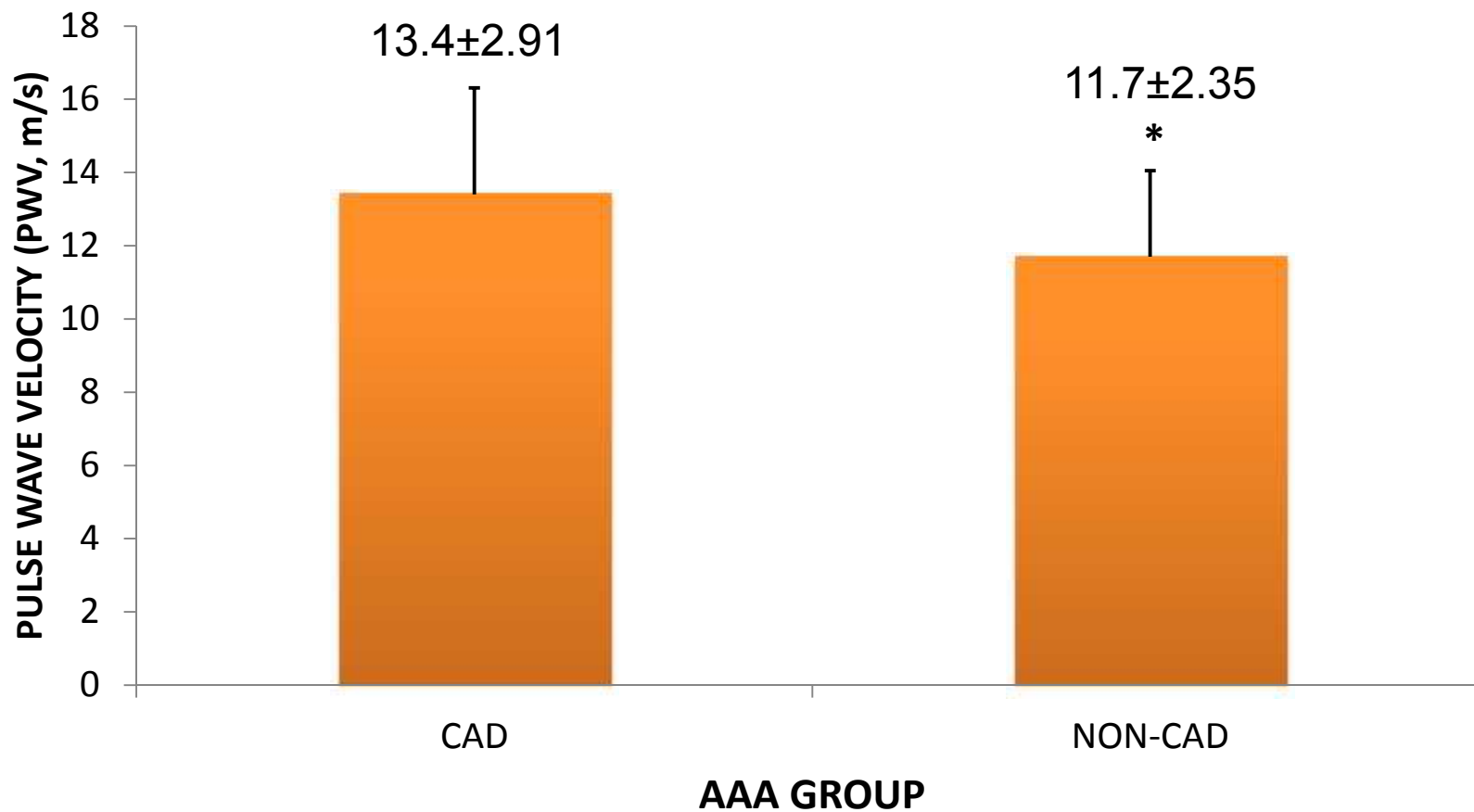
- Patients with AAA and HC did not differ in anthropometrical characteristics, lipid profile and blood pressure levels ($p>0.05$).
- PWV was found considerably higher in AAA group (11.92 ± 2.69 m/s) compared to CAD group (9.60 ± 2.61 m/s) and HC group (7.63 ± 2.38 m/s), ($p<0.001$ for all comparisons).
- Importantly, among patients with AAA, those patients with concomitant history of CAD ($n=41$) had greater PWV than their non-CAD counterparts ($n=54$) (13.4 ± 2.91 m/s vs. 11.7 ± 2.35 m/s, $p=0.03$)

RESULTS



* $p < 0.001$ by post hoc analysis for comparison of AAA group vs. CAD group and HC group.

RESULTS



* p = 0.03 by post hoc analysis for comparison of AAA with CAD vs. AAA without CAD.

RESULTS

Univariate analysis, revealed significant correlations of **PWV** with:

- **systolic blood pressure** (b regression coefficient=0.428, p=0.012)
- **diastolic blood pressure** (b=0.393, p=0.024)
- **the presence of CAD** (b=0.551, p=0.001).

RESULTS

- By multivariate analysis, a PWV >12 m/sec had an odds ratio for the presence of CAD of 1.8 (95%CI:1.1-2.0, $p=0.03$) in a model including age, sex and traditional atherosclerotic risk factors.
- The sensitivity and specificity of PWV >12 m/sec for CAD in patients with AAA was 88% and 81% respectively.

CONCLUSION

- PWV is higher in patients with abdominal aortic aneurysms compared to healthy controls.
- Increasing PWV values are a valid marker of concomitant CAD in patients with abdominal aortic aneurysms.

ΕΥΧΑΡΙΣΤΩ