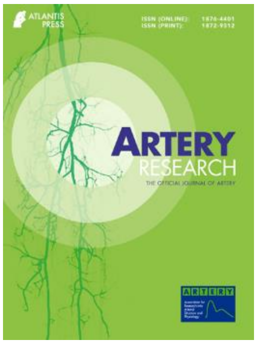

Artery Research

ISSN (Online): 1876-4401 ISSN (Print): 1872-9312
Journal Home Page: https://www.atlantis-press.com/journals/artres

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To cite this article: N.S. Gale, J.M. Duckers, M. Munnery, S. Enright, J.R. Cockcroft, C.E. Bolton, D.J. Shale (2009) 8.1: CENTRAL ARTERIAL STIFFNESS OCCURS IN BRONCHIECTASIS, Artery Research 3:4, 159–159, DOI: https://doi.org/10.1016/j.artres.2009.10.173

To link to this article: https://doi.org/10.1016/j.artres.2009.10.173

Published online: 14 December 2019

Artery Research (2009) **3**, 159—160

available at www.sciencedirect.com

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journal homepage: www.elsevier.com/locate/artres

Oral Presentation Abstracts

8.1
CENTRAL ARTERIAL STIFFNESS OCCURS IN BRONCHIECTASIS

N. S. Gale [1], J. M. Duckers [2], M. Munnery [3], S. Enright [1], J. R. Cockcroft [3], C. E. Bolton [2], D. J. Shale [2]
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Rationale: Bronchiectasis is characterised by inflammation and airways injury, which lead to loss of airways function, factors which are associated with an increased risk of cardiovascular disease (CVD) in various populations. Central arterial stiffness (AS) a predictor of CVD risk has not been studied in bronchiectasis. We hypothesised that patients with bronchiectasis would have increased AS.

Methods: We studied 20 clinically stable patients with bronchiectasis and 20 age, sex and smoking matched controls, without evidence of CVD. In all subjects we determined FEV_1, aortic pulse wave velocity (PWV), fasting lipids and systemic inflammation (IL-6).

Results: Aortic PWV and IL-6 were greater in patients, than controls ($p < 0.05$), while age, BMI, lipids and MAP were similar for patients and controls. In all subjects age was the only predictor of aortic PWV ($p < 0.01$).

Conclusions: Patients with bronchiectasis have increased AS, as determined by aortic PWV, which indicates an increased risk of CVD. Longer term studies are needed to determine the importance of this finding.

Mean (SD)	Control (n = 20)	Patient (n = 20)
Men n (%)	4 (20)	4 (20)
Age (yrs) §	62 (43-69)	65 (42-80)
Smoking Pack yrs §	0 (0-30)	0 (0-30)
FEV_1 (% predicted)	105.1 (9.1)	67.8 (25.8)**
Heart rate (bpm)	65.4 (9.4)	73.0 (11.9)*
MAP (mmHg)	100.1 (14.3)	103.2 (12.0)
Aortic PWV (m/s)	8.8 (1.6)	10.5 (3)*
AIx (%)	29.6 (8.8)	28.8 (8.7)
IL-6 (pg/ml) †	1.19 (3.7)	4.41 (5.81)*

*$p < 0.05$; **$p < 0.001$ difference. § median (range). † geometric mean (SD).

8.2
COMPARISON OF THREE DIFFERENT METHODS TO CALCULATE AORTIC PULSE WAVE VELOCITY (PWV) USING A 1D MODEL OF THE SYSTEMIC CIRCULATION

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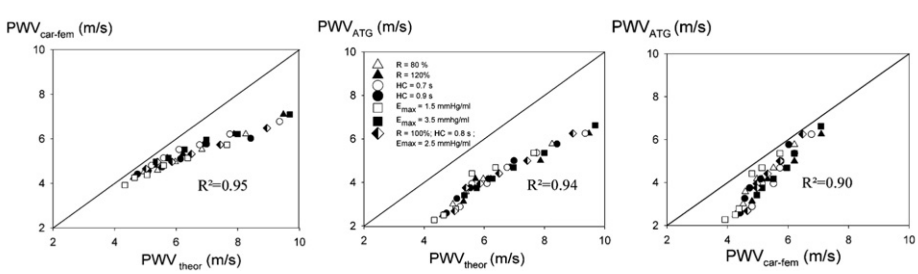
Aortic pulse wave velocity (PWV) is a measure of the stiffness of the large arteries, and is often used as indicator of clinical cardiovascular risk. Yet, methodological issues still exist on how PWV should best be measured. We have used a 1D arterial network computer model of the systemic circulation to compare three different methods to determine aortic PWV: $PWV_{car\text{-}fem}$ (~ carotid-femoral PWV, the current clinical gold standard method), PWV_{ATG} (~ PWV computed with a new device called Arteriograph, making use of only one brachial pressure recording) and PWV_{theor} (~ theoretical PWV according to the Bramwell-Hill equation). Different model parameters such as arterial distensibility, terminal resistance (R), cardiac contractility (Emax) and duration of the heart cycle (HC) were varied to obtain in total 42 different simulations. We found a good correlation between PWV_{theor} and $PWV_{car\text{-}fem}$ ($R^2 = 0.95$) or PWV_{ATG} ($R^2 = 0.94$) but the latter were systematically lower than PWV_{theor} (with 1.08 ± 0.70 m/s for $PWV_{car\text{-}fem}$ and 2.17 ± 0.42 m/s for PWV_{ATG} respectively). For both methods, Bland-Altman plots showed that the underestimation increases for higher values of PWV (figure not shown). Comparing $PWV_{car\text{-}fem}$ with PWV_{ATG}, both methods correlate well ($R^2 = 0.90$), with PWVcar-fem being on average 1.09 ± 0.48 m/s higher than PWV_{ATG}. In conclusion, in our computer model study, both the carotid-femoral PWV and the Arteriograph method provide values that correlate well to aortic PWV, but the actual values are lower than the theoretical ones following from the Bramwell-Hill formula.



8.3
MRI OF ENDOTHELIAL ADHESION MOLECULES IN CAROTID ATHEROSCLEROSIS USING TARGETED ULTRASMALL SUPERPARAMAGNETIC PARTICLES OF IRON OXIDE (USPIO) - TOWARDS AN IN VIVO MODEL

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1872-9312/$ — see front matter