



Artery Research

ISSN (Online): 1876-4401

ISSN (Print): 1872-9312

Journal Home Page: <https://www.atlantispress.com/journals/artres>

P127: SPATIAL VARIATION OF RESERVOIR PRESSURE IN CHILDREN ASSESSED WITH HIGH FIDELITY PRESSURE MEASUREMENT IN FIVE AORTIC LOCATIONS

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To cite this article: Jonathan Mynard, Lucas Eastaugh, Geoff Lane, Greta Goldsmith, Gabriella Springall, Alberto Avolio, Joe Smolich, Michael Cheung (2018) P127: SPATIAL VARIATION OF RESERVOIR PRESSURE IN CHILDREN ASSESSED WITH HIGH FIDELITY PRESSURE MEASUREMENT IN FIVE AORTIC LOCATIONS, Artery Research 24:C, 116–116, DOI: <https://doi.org/10.1016/j.artres.2018.10.180>

To link to this article: <https://doi.org/10.1016/j.artres.2018.10.180>

Published online: 7 December 2019

Variable	Mean	SD
Age, years	69.1	6.2
Male sex, n (%)	416	(78.9)
Systolic BP, mmHg	141.3	16.2
Diastolic BP, mmHg	84.9	10.4
MAP _{osc} , mmHg	100.7	10.6
MAP _{wave} , mmHg	105.3	11.6
Heart rate, min ⁻¹	65.8	11
FF _{osc}	0.28	0.02
FF _{wave}	0.36	0.04
MAP _{0.4} , mmHg	107.5	

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Poster Session II – Models, Methodologies and Imaging Technology II P126

THE ASSOCIATION OF THE INTEGRATED CENTRAL PRESSURE-STIFFNESS RISK SCORE WITH CARDIOVASCULAR MORTALITY IN HEMODIALYSIS PATIENTS

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Background: Our aim was to study the predictive power of ICPS risk categories on CV mortality in hemodialysis patients.

Methods: In our retrospective cohort study 91 patients were involved from two dialysis centers. Pulse Wave Velocity (PWV), central systolic blood pressure (cSBP) and central pulse pressure (cPP) were measured with tonometric method, patients were followed for a median of 29.5 months and CV mortality was registered. Patients were classified into tertiles based on their PWV, cSBP and cPP values. After the analysis of the predictive values of the tertiles of the identical parameters, patients were scored. One score was given, when a patient had a third tertile value of cSBP or a second or third tertile value of PWV or cPP. Then the CV outcome was analyzed with Cox regression analysis of the groups of patients with different ICPS scores and three ICPS risk categories were defined: average (0-1 point), high (2 points) and very high (3 points).

Results: During follow-up 31 events occurred. After adjustment for multiple factors, compared with the average ICPS risk category group (n = 35; 38%), those, who were in the high risk group (n = 33; 30%) showed a tendency for significantly higher hazard ratio (HR) of CV mortality (HR = 2.62, 95% confidence interval (CI):0.82–8.43), while patients in the very high ICPS risk category (n = 23; 21%) had a markedly increased risk (HR = 10.03, CI:1.67–60.42).

Conclusions: The ICPS risk categories can help in the identification of hemodialysis patients with high CV risk.

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SPATIAL VARIATION OF RESERVOIR PRESSURE IN CHILDREN ASSESSED WITH HIGH FIDELITY PRESSURE MEASUREMENT IN FIVE AORTIC LOCATIONS

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Objective: To assess whether reservoir pressure (Pres) in young individuals with a compliant aorta is uniform throughout the aorta, as has recently been reported in older adults with cardiovascular disease (1).

Methods: High fidelity pressure was measured with a Verrata wire (Philips Volcano) in 5 aortic locations (ascending-to-abdominal) via pull-back in 11 children with a normal aorta (age 10.4 ± 4.9 years, mean ± SD). Pres was calculated using the 'pressure-only' approach (2), with exponential fitting over the whole of diastole (1) (WholeDia) or the period when pressure declined in an approximately exponential fashion (ExpDia).

Results: ExpDia produced a better fit than WholeDia (R² = 0.99 ± 0.01 vs 0.91 ± 0.11, P < 0.001). P_{res} amplitude (ΔP_{res}) in the ascending aorta from WholeDia fitting (12.0 ± 4.1 mmHg) was less than with ExpDia fitting (19.0 ± 5.2, P = 0.001). The zero-flow asymptotic pressure (P_{inf}) obtained from the fitting procedure was negative (non-physiological) in 76% (WholeDia) and 44% (ExpDia) of recordings, but fixing P_{inf} to 37 mmHg (average of physiological values) had little effect on the resulting ΔP_{res}. ΔP_{res} varied by 5.7 ± 3.0 mmHg (WholeDia) and 7.3 ± 3.7 mmHg (ExpDia) between aortic locations (both P < 0.001 compared with zero), corresponding to 44% ± 30% and 38% ± 17% of average ΔP_{res} respectively. Maximum instantaneous spatial differences in P_{res} amounted to a substantial percentage of ΔP_{res} (45% ± 37% WholeDia; 24% ± 26% ExpDia) and were not reduced by time and/or pressure offsets to align P_{res} foot.

Conclusion: In young individuals, P_{res} was sensitive to the fitting period and often resulted in non-physiological P_{inf} values. Regardless of calculation method or alignment, P_{res} was not uniform along the aorta.

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RADIAL INTIMA-MEDIA THICKNESS ASSESSMENT BY ULTRA-HIGH FREQUENCY ULTRASOUND AND AUTOMATED IMAGE-ANALYSIS IN HEALTHY VOLUNTEERS

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Background: Ultrahigh-frequency ultrasound may represent a powerful tool for investigating the arterial properties of medium and small-size arteries. Aim of this study was: 1) to evaluate intra- and inter-operator reproducibility of radial artery vascular parameters (intima-media thickness –IMT- and diastolic diameter –DD), obtained both with a manual and an automatic approach; 2) to identify physiological correlates of radial IMT.

Methods: 40 healthy subjects were examined by Vevo MD (FUJIFILM, VisualSonics, Toronto, Canada); in 11 volunteers two B-mode clips (longitudinal view) of the radial artery were acquired for each subject by two skilled operators. IMT DD were measured manually and using an automatic software (Cardiovascular Suite, QUIPU, Pisa, Italy). Coefficient of variations (CV) and Bland-Altman analysis were employed.