1.3: PREDICTION OF CARDIOVASCULAR MORTALITY AND MORBIDITY IN THE MALMÖ DIET-CANCER COHORT FOR THE IDENTIFICATION OF HEALTHY VASCULAR AGEING, USING MARKERS OF VASCULAR STATUS

Benjamin Nilsson Wadström, Peter Nilsson, Abd Al-Hakim Fatehali, Gunnar Engstrom


To link to this article: https://doi.org/10.1016/j.artres.2018.10.020

Published online: 7 December 2019
Oral Session I – Epidemiology + Special Populations

1.1 PROMOTION OF ARTERIAL STIFFNESS BY CHILDHOOD CANCER AND ITS CHARACTERISTICS IN ADULT LONG-TERM SURVIVORS

Natalie Arnold 1, Hiltrud Merzenich 2, Arthur Wingeter 1, Andreas Schluz 4, Astrid Schneider 1, Jürgen H. Prochaska 1, Sebastian Göbel 1, Marie-Astrid Neu 1, Nicole Henninger 1, Marina Panova-Noeva 1, Susan Eckerle 1, Claudia Spix 1, Irene Schickert 1, Karl J. Lackner 1, Manfred E. Beutel 1, Norbert Pfeiffer 5, Thomas Münzel 6, Jörg Faber 7, Philipp S. Wild 8

1University Medical Center of the Johannes Gutenberg-University Mainz, Germany
2Institute for Medical Biostatistics, Epidemiology and Informatics, University Medical Center of the Johannes Gutenberg University Mainz, Mainz, Germany
3Department of Pediatric Hematology/Oncology/Hemostaseology, Center for Paediatric and Adolescent Medicine, University Medical Center of the Johannes Gutenberg University Mainz, Mainz, Germany
4Preventive Cardiology and Preventive Medicine, Centre for Cardiology, University Medical Center of the Johannes Gutenberg-University Mainz, Mainz, Germany
5Department for Pulmonary Medicine, University Medical Center of the Johannes Gutenberg-University Mainz, Mainz, Germany
6Department of Cardiology – Cardiology I, University Medical Center of the Johannes Gutenberg-University Mainz, Mainz, Germany
7Institute of Clinical Chemistry and Laboratory Medicine, University Medical Center of the Johannes Gutenberg-University Mainz, Mainz, Germany
8Clinic for Psychosomatic Medicine and Psychotherapy, University Medical Center of the Johannes Gutenberg-University Mainz, Mainz, Germany
9Department of Ophthalmology, University Medical Center of the Johannes Gutenberg-University Mainz, Mainz, Germany

Background: Vascular alterations induced by antineoplastic treatment might be considered as a possible underlying mechanism of increased cardiovascular (CV) sequelae in childhood cancer survivors (CCS). Therefore, we thought to evaluate the changes in arterial stiffness (AS) among long-term CCS compared to the general population.

Methods: AS was assessed by digital photoplethysmography (Stiffness Index (SI); m/s) among 1,002 participant of “Cardiac and Vascular late Sequelae in long-term Survivors of childhood cancer” study, diagnosed with neoplasia prior to an age of 15 years (1980–1990). A population-based subsample from the Gutenberg Health Study (GHS) (n = 5,252) was used for comparison. All subjects underwent a comprehensive, standardized clinical examination in the same study center.

Results: Compared to the population subsample with similar age range, CCS had higher SI in multivariable linear regression analysis with adjustment for cardiovascular risk factor and comorbidities (β = 0.66[0.51/0.80]; p < 0.0001). Moreover, SI was varying according to tumor entity with highest values exceeding age-specific, population-based reference limits was observed among CCS compared to individuals from the population.

Conclusions: This is the first study demonstrating increased AS among long-term CCS. The data suggest that AS promotion might differ in individuals with childhood cancer: Cancer development and antineoplastic treatment might be relevant determinants.

1.2 ASSOCIATIONS BETWEEN INDICATORS OF CARDIOVASCULAR DISEASE AND PULSE WAVE ANALYSIS AND VELOCITY: A COMPARISON OF DEVICES

Elizabeth Ellins 1, Lucy Lennon 2, Ola Papacosta 2, Goya Wannamethee 2, Peter Whincup 1, Julian Halcox 4

1Swansea University Medical School, Swansea, UK
2UCL Department of Primary Care & Population Health, UCL, London, UK
3Population Health Research Institute, St George’s University of London, UK
4Swansea University Medical School, Swansea, UK

Background: Both the Sphygmocor (S) and Vicorder (V) devices can be used for Pulse Wave Analysis (PWA) and Velocity (PWV). We investigated if there were differences in the associations between markers of Cardiovascular Disease (CVD) and PWA and PWV variables as assessed by the two devices.

Methods: 1,722 men (78.5 ± 4.7 yrs) from the British Regional Heart Study underwent PWA and PWV with the Sphygmocor and Vicorder devices. Carotid artery Intima-media Thickness (cIMT), NT-proBNP and Left Ventricle Hypertrophy (LVH) detected by ECG were also assessed. Multiple regression was used to investigate the associations between cIMT, NT-proBNP and LVH with each of the following measures, central Augmentation Pressure (cAP) Augmentation Index (cAIx) Blood Pressure (cBP) and carotid to femoral PWV.

Results: Men with data obtained from both devices were included (PWA n = 1,373, PWV n = 1,122). Following adjustment for CVD risk factors, Sphygmocor cAP, cAIx and cBP were all positively associated with LVH (p < 0.05), the relationship between Sphygmocor PWV and LVH was negative (OR 0.87 95% CI 0.78–0.97). There were no associations between LVH and Vicorder variables. cAP measured by both devices and cAIx by Vicorder were predictors of NT-proBNP levels (ScAP Beta 0.097 p < 0.05, VcAP Beta 0.153 p < 0.001 & VcAIx Beta 0.129 p < 0.001). Vicorder cBP was the only predictor of cIMT (Beta 0.057 p < 0.05).

Conclusion: The same measures from two devices were predictors of different indicators of CVD. Further exploration is needed to understand these differences, but device used needs to be taken into consideration when comparing findings of these variables with other published results.

1.3 PREDICTION OF CARDIOVASCULAR MORTALITY AND MORBIDITY IN THE MALMÖ DIET-CANCER COHORT FOR THE IDENTIFICATION OF HEALTHY VASCULAR AGEING, USING MARKERS OF VASCULAR STATUS

Benjamin Nilsson Wadström 1, Peter Nilsson 2, Abd Al-Hakim Fatehali 1, Gunnar Engstrom 1

1Lund University, Department of Clinical Sciences, Skane University Hospital, Malmo, Sweden
1.5 DEEP VASCULAR PHENOTYPING IN PATIENTS WITH FIBROMUSCULAR DYSPLASIA

Rosa Maria Bruno 1,2, Louise Marais 2, Hakim Khettab 3, Aurélien Lorthioir 3, Xavier Jeunemaitre 4,2, Stéphane Laurent 3,2, Pierre Boutouyrie 3,2, Michel Azizi 3
1University of Pisa, Italy
2INSERM U970, Paris, France
3APHP, Hôpital Européen Georges Pompidou, Paris, France
4APHP, Hôpital Européen Georges Pompidou, France

Background: Fibromuscular dysplasia (FMD) is a non-atherosclerotic, non-inflammatory vascular disease involving medium-sized muscular arteries, whose pathophysiology is still unknown.

Objectives: We aimed at identifying systemic vascular alterations in usually non-aﬀected arteries of patients with multifocal renal FMD by a deep imaging-based phenotyping.

Methods: This cross-sectional study included FMD patients (n = 50, 84% hypertensives), age-, sex and BP-matched patients with primary hypertension (PH, n = 50) and healthy normotensive subjects (HS, n = 50). Brachial artery (BA) endothelium-dependent flow-mediated dilation (EDD) and endothelial-independent vasodilation (EID) were studied. Aortic stiffness was assessed by carotid-to-femoral pulse wave velocity (PWV). We quantified abnormal echographic patterns in the common carotid wall by the triple signal score. Common carotid Young’s incremental elastic modulus (Einc)/stress curves were also plotted.

Results: FMD patients had impaired EID compared to PH and HS (p = 0.008, after adjustment for confounders p = 0.002), smaller BA diameter but comparable EDD and PWV. The prevalence of triple signal score >6 was 56%, 40%, 24% in FMD, PH and HS respectively (p = 0.005). FMD, but not PH, was significantly associated with triple signal (beta = 0.143, p = 0.022, r2 = 0.058). Impaired EDD was only present in FMD patients with triple signal score >6 (p for interaction = 0.047). For a given stress value of 80 kPa, Elnc was higher in the presence of a triple signal score >6, especially in FMD patients.

Conclusions: Non-aﬀected musculo-elastic and muscular arteries in patients with multifocal renal FMD exhibit a cluster of functional and structural abnormalities, while elastic arteries are preserved. Triple signal in FMD may identify a distinct vascular phenotype.

1.6 AORTIC PULSE WAVE VELOCITY IN PORTUGUESE CHILDREN AND ADOLESCENTS – RESULTS FROM THE PORTUGUESE VASCULAR PHENOTYPE IN CHILDREN AND ADOLESCENTS (PORT-VASPH) COHORT

Telmo Pereira 1, João Maldonado 1,2, Margarida Carvalho 3
1Polytechnic Institute, Coimbra Health School, Portugal
2Polytechnic Institute, Coimbra Health School, Portugal
3Clínica da Aveleira, Coimbra, Portugal

Introduction: The PORT-VASPh Cohort was designed to contribute to a better understanding of vascular function in children and adolescents, mostly focusing PWV and other complementary aspects of arterial hemodynamics.

Methods: The PORT-VASPh cohort is a prospective and observational study, with 953 children and adolescents enrolled, 40% females, age ranging from 5 to 17 years (mean age: 12.08 ± 2.92 years). The overall health profile for each participant was defined based on three clinical evaluations, in which blood pressure (BP) was measured under standard conditions over the