P140: ARTERIAL WAVE DYNAMICS IN THE HORSE: INSIGHTS OBTAINED FROM A 1D ARTERIAL NETWORK MODEL SIMULATION

Daimé Campos Arias, Lisse Vera, Sofie Muylle, Nikos Stergiopulos, Gunther van Loon, Patrick Segers


To link to this article: https://doi.org/10.1016/j.artres.2018.10.193

Published online: 7 December 2019
Poster Session II – Diabetes, Obesity and Kidney

P141
TELOMERE DYNAMICS RELATION WITH OBESITY
Simon Toupance 1, Mirna Chahine 2, Irini Tzanetakou 3, Carlos Labat 4, Sylvie Gautier 1, Cécile Lakomy 4, Pascal Rossi 5, Toufic Moussallem 1, Pierre Yared 6, Didier Quilliot 7, Evangelos Menenakos 8, Roland Asmar 2, Athanase Benetos 1, 12
1Department of Geriatrics, University Hospital of Nancy, Nancy, France
2Foundation-Medical Research Institutes, Beirut, Lebanon
3European University of Cyprus, School of Sciences, Engomi, Cyprus
4Inserm UMR 1116, University of Lorraine, Nancy, France
5North hospital, APHM, Marseille, France
6Faculty of Medical Sciences, Lebanese University, Hadath, Lebanon
7Department of Endocrinology, University Hospital of Nancy, Nancy, France
8Medical School of Athens, National and Kapodistrian University of Athens, Greece

Background: The relation between telomere dynamics and obesity remains unclear. Cross-sectional studies found associations between short leukocyte telomere length (LTL) and high body mass index (BMI) but longitudinal studies did not find any association between LTL attrition and BMI. In two parallel studies, we aimed to assess the relationship between obesity and telomere dynamics in different tissues.

Methods: Study 1: Measurements of LTL and TL in skeletal muscle (MTL) were performed in 53 subjects with severe obesity (BMI > 35) and in 53 age- and sex-matched without obesity (21 < BMI < 30). MTL is a proxy of TL at birth and the LTL/MTL ratio represents life-long telomere attrition. Study 2: Measurements of TL in subcutaneous fat (SCF), a high proliferative adipose tissue, and visceral fat (VF), a low proliferative one in 50 severe obese bariatric patients. TL measurements were performed by Southern blot.

Results: Study 1: In younger (<55 years), but not in older, LTL and LTL/MTL were shorter in obese patients vs controls (7.16 kb vs 7.54 kb, p < 0.05 for LTL and 81% vs 84%, p < 0.05 for LTL/MTL). Study 2: Within obese bariatric patients, SCF/VF TL ratio was lower in those with early onset obesity (96% for obesity since childhood vs 97% since adolescence vs 100% for adult development of obesity; p < 0.05).

Conclusions: Early life obesity is associated with higher TL attrition leading to shorter TL in high proliferative tissues.

References

Poster Session II – Diabetes, Obesity and Kidney

P142
EARLY VASCULAR PARAMETERS IN THE MICRO- AND MACROCIRCULATION IN TYPE 2 DIABETES
Christian Ott, Dennis Kannenkerl, Marina Karg, Agnes Bosch, Joanna Harazzy, Roland Schmieder
Department of Nephrology and Hypertension, University of Erlangen-Nuremberg, Erlangen, Germany

Background: Diabetes converts from a metabolic disorder into a predominantly vascular disease, once its duration extends over several years or/and when additional cardiovascular risk factors such as hypertension coexist. We analyzed various vascular parameters in the renal, retinal and systemic circulation, with the goal to identify which vascular parameter of early organ damage is the earliest that can be clinically detected.

Methods: In 111 patients with type-2 diabetes (T2DM) (off any anti-diabetic medication for at least 4 weeks) and 54 subjects without T2DM we assessed urinary albumin-to-creatinine ratio (UACR) and estimated glomerular filtration rate (eGFR), retinal capillary flow (RCF), intercapillary distance (ICD) as parameters of capillary rarefaction, wall-to-lumen ratio (WLR) of the retinal arteries (all assessed by Scanning Laser Doppler Flowmetry), and central systolic blood pressure (cSBP) and central pulse pressure (cPP) [assessed by Syphymocor] both reflecting vascular stiffness of large arteries.

Results: Compared to subjects without T2DM, patients with T2DM were older, more females but 24-hour systolic and diastolic BP did not differ between the two groups (129.3 ± 11.4/78.9 ± 8.3 vs. 130.4 ± 10.8/77.4 ± 5.6 mmHg). The analysis adjusted for age, gender and cardiovascular risk factors showed that ICD, cPP were significantly higher and eGFR was significantly lower in patients with T2DM than in subjects without T2DM (Figure).

Conclusion: These data suggest that at similar BP capillary rarefaction in the retinal circulation (ICD), eGFR in the renal circulation and cPP of large arteries are earlier detectable than vascular remodeling of the micro- (WLR, RCF, UACR) and macrocirculation (cSBP) in patients with T2DM.