



Conference Abstract

P.61 Impact of Kidney Transplantation on Arterial Reservoir-Wave Analysis

Nadège Côté^{1,2,*}, Emy Philibert^{1,2}, Mathilde Paré^{1,2}, Rémi Goupil³, Catherine Fortier^{1,2,4}, Martin G. Schultz⁵, James E. Sharman⁵, Mohsen Agharazii^{1,2}

¹Division of Nephrology, Faculty of Medicine, Université Laval

²CHU de Québec Research Center, L'Hôtel-Dieu de Québec Hospital

³Hôpital du Sacré-Cœur de Montréal

⁴INSERM U-970, Paris Cardiovascular research Center (PARCC)

⁵Menzies Institute for Medical Research, University of Tasmania

Keywords

Kidney transplantation
reservoir-wave analysis

ABSTRACT

Purpose/Background/Objective: According to reservoir-wave approach (RWA) arterial pressure is the sum of a reservoir pressure (RP) accounting for dynamic storage and release of blood from arteries, and an excess pressure (XSP) analogous to flow. RP is the minimal left ventricular work required to generate aortic flow, while XSP corresponds to surplus cardiac workload. We have previously shown that kidney transplantation (KTx) improves aortic stiffness [1], however, by adding renal vessels to existing vascular network, KTx may increase cardiac output. Thus, we aimed to examine whether XSP increases after KTx.

Methods: Before and 3 months after KTx, carotid pressure waves were recorded using arterial tonometry, calibrated using brachial diastolic and mean blood pressure. Using pressure only approach, reservoir-wave analysis was used to derive RP, XSP and their integrals (RPI, XSPI). RWA parameters were compared with Wilcoxon non-parametric test using SPSS 26.0.

Results: 75 patients (69% male, mean age 51 ± 13 years) were assessed. Three months after KTx, both carotid RP (121.2 ± 20.7 vs 103.5 ± 15.7 , $p < 0.001$) and RPI (11192.52 ± 2763.11 vs 9531 ± 1978 , $p < 0.001$) decreased significantly, but carotid XSP and XSPI remained unchanged. Carotid systolic (131.0 ± 23.2 vs 114.1 ± 15.5 , $p < 0.001$) and diastolic (83.4 ± 11.9 vs 72.8 ± 9.93 , $p < 0.001$) blood pressures were also reduced.

Conclusion: KTx decreased reservoir pressure, suggesting a decrease in minimal cardiac workload. However, we did not see an increase in excess pressure or its integral, suggesting that addition of a donor renal artery does not significantly alter cardiac outflow and excess workload 3 months after KTx.

REFERENCE

- [1] Desjardins MP, Sidibé A, Fortier C, Mac-Way F, De Serre S, Larivière R, et al. Impact of kidney transplantation on aortic stiffness and aortic stiffness index β_0 . *J Hypertens* 2019;37:1521–8.

© 2020 Association for Research into Arterial Structure and Physiology. Publishing services by Atlantis Press International B.V. This is an open access article distributed under the CC BY-NC 4.0 license (<http://creativecommons.org/licenses/by-nc/4.0/>).

*Corresponding author. Email: nadège.cote.1@ulaval.ca