P112: CENTRAL PULSE WAVE PARAMETERS ARE ASSOCIATED WITH VALVE CALCIFICATION IN PATIENTS WITH END-STAGE RENAL DISEASE ON MAINTENANCE HEMODIALYSIS

Maria Trukhanova, Nadezhda Manukhina, Dmitry Doroshenko, Svetlana Villevalde, Zhanna Kobalava

To cite this article: Maria Trukhanova, Nadezhda Manukhina, Dmitry Doroshenko, Svetlana Villevalde, Zhanna Kobalava (2017) P112: CENTRAL PULSE WAVE PARAMETERS ARE ASSOCIATED WITH VALVE CALCIFICATION IN PATIENTS WITH END-STAGE RENAL DISEASE ON MAINTENANCE HEMODIALYSIS, Artery Research 20:C, 92–93, DOI: https://doi.org/10.1016/j.artres.2017.10.143

To link to this article: https://doi.org/10.1016/j.artres.2017.10.143

Published online: 7 December 2019
Vascular calcification (VC) is linked to post-transplant cardiovascular events in the long term. We aimed to evaluate whether pretransplant chest X-ray based aortic arch calcification (AoAC) or pulse wave velocity measurement can better predict post-transplant cardiovascular or cerebrovascular events, and to assess the progression of calcification within 2 years.

**Methods:** Our single-center observational longitudinal study enrolled 40 kidney transplant recipients (KTR) without previous history of vascular events (no cardiovascular, cerebrovascular events, no peripheral artery disease). Two radiologists evaluated pretransplant and posttransplant (after 2 years) AoAC on chest X-ray by using two different AoAC scales: AoAC grade evaluation [1] and AoAC score as suggested by Ogawa et al. in 2009 [2]. Cohen’s kappa coefficient was 0.75. The mismatching results were repeatedly reviewed and resulted in consensus. Carotid-femoral (cfPWV) and carotid-radial pulse wave velocity (cpPWV) was measured using applanation tonometry and the PWV ratio (cpPWV/cfPWV) was calculated. Patient clinical, biochemical data and cardiovascular/cerebrovascular event rate were monitored within 2 years.

**Results:** During 2-year follow-up 5 patients experienced cardiovascular events, which were predicted by PWV ratio, but not related to AoAC. In 3 patients, we observed progression of AoAC, in others — AoAC was less evident or remained unchanged in 2-years follow-up. AoAC score [2] could better describe the extent of vascular calcification in KTR.

**Conclusions:** KTR without previous vascular events have quite low cardiovascular/cerebrovascular event rate within 2-year follow-up, which are better predicted by pretransplant PWV ratio. AoAC posttransplant regression is evident even when simplified chest X-ray scales.

**References**

**Table 1. Mean values of CAVI.**

<table>
<thead>
<tr>
<th>eGFR</th>
<th>Men 40–50 p</th>
<th>Women 50–50 p</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;60</td>
<td>5.80 0.159</td>
<td>7.70 0.948</td>
</tr>
<tr>
<td>60–90</td>
<td>6.63 0.70</td>
<td>7.54 1.48</td>
</tr>
<tr>
<td>&gt;90</td>
<td>7.30 0.37</td>
<td>7.10 1.27</td>
</tr>
</tbody>
</table>

**P110**

**DIFFERENCES IN ARTERIAL STIFFNESS MEASURED BY CARDO-ANKLE VASCULAR INDEX IN PATIENTS WITH NORMAL AND DECREASED RENAL FUNCTION**

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**Background:** Arterial stiffness (AS) is a highly prognostic risk factor of cardiovascular diseases. The aim of this study was to investigate the relationships between cardio-ankle vascular index (CAVI) and eGFR in patients under the risk of cardiovascular disease.

**Methods:** This was a retrospective study of Lithuania High cardiovascular risk patients' database. Demographic, renal function and AS data was gathered. Patients were divided into groups by gender and age by intervals of 5 years. Mean values of CAVI were further investigated according to the patients’ eGFR. ANOVA was used to compare mean values of CAVI.

**Results:** This study included data of 2070 patients aged from 40 to 65 years. The mean eGFR of the patients was 100.13 ml/min/1.73m², 58.7% were women. The increase in CAVI was observed with age in overall population, with mean values in different age groups of 6.35 ± 1.28, 7.13 ± 1.84, 7.71 ± 1.92, 7.97 ± 1.95, 7.73 ± 1.98, 8.06 ± 1.79, p < 0.001. Calculation of the mean CAVI in different age and gender groups of eGFR are presented in Table 1. Further comparison of mean values of CAVI did not yield statistically significant results.

**Conclusions:** Arterial stiffness increases with age in overall population. There was no statistically significant difference between mean values of CAVI in groups divided by age and gender according to eGFR.

**References**
Abstracts

(VC) in patients with end-stage renal disease (ESRD) and its association with clinical parameters of arterial stiffness.

Methods: In 68 adults with ESRD on maintenance hemodialysis for >3 months (45.6% males, median age 58.3 (interquartile range (IQR) 54.6; 61.6) years, dialysis duration 62.7 (47.8; 77) months, echocardiography and applanation tonometry was performed.

Results: Calcification of the aortic, mitral and both valves was revealed in 46 (67.6%), 34 (50%) and 33 (48.5%) of patients. 20 (29%) patients had no signs of VC. Patients with vs without AVC were older (51 ± 9.4 vs 41.4 ± 11.9 years, p < 0.001), had higher dialysis duration (51 vs (252) vs 21 (10; 38) months, p < 0.01), lower peripheral diastolic blood pressure (DBP) (76 ± 17 vs 84 ± 12 mmHg, p < 0.05), reflected wave transit time (RWTT) (131 ± 17 vs 137 ± 15 ms, p < 0.05). Patients with vs without MVC were older (67.8 ± 8.2 vs 47.9 ± 13.5 years, p < 0.001), had higher dialysis duration (51 vs (111) vs 36 (14; 57) months, p < 0.01), carotid-femoral pulse wave velocity (10.1 ± 2.7 vs 8.9 ± 3.5 m/s, p < 0.05), lower peripheral DBP (73 ± 17 vs 84 ± 14 mmHg, p < 0.01), central DBP (72 ± 13 vs 83 ± 13 mmHg, p < 0.001), higher central pulse pressure (52 ± 13 vs 45 ± 16 mmHg, p < 0.05), lower RWTT (133 (120; 130) vs 135 (132; 142) ms, p < 0.05).

Conclusion: High prevalence of VC (71%) was revealed in patients with ESRD on maintenance hemodialysis. Patients with vs without VC were older, had higher duration of dialysis and more pronounced arterial stiffness.

P113
DIABETIC AMBULATORY BLOOD PRESSURE PARAMETERS ARE ASSOCIATED WITH VALVE CALCIFICATION IN PATIENTS WITH END-STAGE RENAL DISEASE ON MAINTENANCE HEMODIALYSIS
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Objective: Valve calcification (VC) is common in patients on hemodialysis and increases the risk of cardiovascular morbidity and mortality. The aim if the study was to evaluate the association between VC and 44-hour ambulatory blood pressure (ABP) variables.

Materials and methods: In 68 patients with end-stage renal disease (ESRD) on maintenance hemodialysis (45.6% males, median age 58.3 (interquartile range (IQR) 54.6; 61.6) years, dialysis duration 62.7 (47.8; 77) months, arterial hypertension 94%, heart failure 28%, diabetes mellitus 21%, glomerulonephritis 35%, pylonephritis 25%, myocutaneous dysplastic kidney 13%) echocardiography and 44-hour ABP monitoring was performed. Mann-Whitney test was considered significant if p < 0.05.

Results: Calcification of the aortic (AVC), mitral (MVC) and both valves was revealed in 46 (67.6%), 34 (50%) and 33 (48.5%) of patients. 20 (29%) patients had no signs of VC. Patients with vs without AVC were older (51 ± 9.4 vs 41.4 ± 11.9 years, p < 0.001), had higher dialysis duration (51 vs (252) vs 21 (10; 38) months, p < 0.01), lower peripheral diastolic blood pressure (DBP) (76 ± 17 vs 84 ± 12 mmHg, p < 0.05), reflected wave transit time (RWTT) (131 ± 17 vs 137 ± 15 ms, p < 0.05). Patients with vs without MVC were older (67.8 ± 8.2 vs 47.9 ± 13.5 years, p < 0.001), had higher dialysis duration (51 vs (111) vs 36 (14; 57) months, p < 0.01), carotid-femoral pulse wave velocity (10.1 ± 2.7 vs 8.9 ± 3.5 m/s, p < 0.05), lower peripheral DBP (73 ± 17 vs 84 ± 14 mmHg, p < 0.01), central DBP (72 ± 13 vs 83 ± 13 mmHg, p < 0.001), higher central pulse pressure (52 ± 13 vs 45 ± 16 mmHg, p < 0.05), lower RWTT (133 (120; 130) vs 135 (132; 142) ms, p < 0.05).

Conclusion: High prevalence of VC (71%) was revealed in patients with ESRD on maintenance hemodialysis. Patients with vs without VC were older, had higher duration of dialysis and more pronounced arterial stiffness.

P114
ARTERIAL STIFFNESS IS ASSOCIATED WITHAMBULATORY BLOOD PRESSURE PARAMETERS IN PATIENTS ON MAINTENANCE HEMODIALYSIS
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Introduction: Arterial stiffness is a principal pathogenetic mechanism of aortic systolic blood pressure (SBP) augmentation, left ventricular hypertrophy and sudden cardiac death. The aim of the study was to evaluate the association between parameters of pulse wave and 44-hour ambulatory blood pressure (ABP) variables in patients with end-stage renal disease.

Methods: In 68 patients with ESRD on maintenance hemodialysis (45.6% males, median age 58.3 (interquartile range (IQR) 54.6; 61.6) years, dialysis duration 62.7 (47.8; 77) months, applanation tonometry and 44-hour ABP monitoring was performed.

Results: Carotid-femoral pulse wave velocity (PWV) < 10 vs PWV ≥ 10m/s was revealed in 52 (76.5%) of patients respectively. Patients with PWV ≥ 10 vs < 10 m/s had higher dialysis duration (median 60; IQR 36; 84) vs 28; IQR 11; 50.5) months, p < 0.05), peripheral SBP (148.1 ± 24.8 vs 140.7 ± 23.6 mmHg, p < 0.05), diastolic blood pressure (DBP) (85.7 ± 19.2 vs 83.3 ± 12.7 mmHg, p < 0.05); 48-hour heart rate (HR) (74.7 ± 13.0 vs 72 ± 8.7 bpm, p < 0.05), mean day one HR (77.8 ± 7.5 vs 72.5 ± 9.7 bpm, p < 0.05), 48-hour DBP variability (DBPV) (78 ± 13 vs 88 ± 12 mmHg, p < 0.01), day two SBP variability (13.5 ± 4.4 vs 13.1 ± 4.1 mmHg, p < 0.05), mean day two BD variability (12 ± 3.9 vs median 11; 11.8 ± 3.6 mmHg, p < 0.05).

Conclusions: Patients with PWV ≥ 10m/s had higher duration of dialysis, higher values of ambulatory DBP and higher − of HR. These findings may have implications in gaining further insights into the mechanism of arterial stiffness.

Poster Session II – Models and Methodologies II P135
PRECISION CALIBRATION OF PERIPHERAL PRESSURE WAVEFORMS USING INTRA-ARTERIAL BLOOD PRESSURE REVEALS THE NEED FOR IMPROVED WAYS TO ACCURATELY ESTIMATE AORTIC BLOOD PRESSURE
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Background: Estimating aortic blood pressure (BP) non-invasively requires peripheral waveform calibration using cuff systolic (SBP) and diastolic