3.2: LOCAL ARTERIAL STIFFNESS ASSESSED BY ECHO TRACKING IS NOT ASSOCIATED WITH AN INCREASED PULSE WAVE VELOCITY IN HYPERCHOLESTEROLEMIC RABBIT

M. Isabelle, C. Ragonnet, S. Chimenti, C. Badier-Commander, C. Vayssettes-Courchay, N. Villeneuve, J.-P. Vilaine

To cite this article: M. Isabelle, C. Ragonnet, S. Chimenti, C. Badier-Commander, C. Vayssettes-Courchay, N. Villeneuve, J.-P. Vilaine (2013) 3.2: LOCAL ARTERIAL STIFFNESS ASSESSED BY ECHO TRACKING IS NOT ASSOCIATED WITH AN INCREASED PULSE WAVE VELOCITY IN HYPERCHOLESTEROLEMIC RABBIT, Artery Research 7:3_4, 165–165, DOI: https://doi.org/10.1016/j.artres.2013.10.015

To link to this article: https://doi.org/10.1016/j.artres.2013.10.015

Published online: 14 December 2019
hour. Therefore, a fee for service to measure central BP of approximately S30 could be both economically and financially justifiable.

Conclusions. Management of hypertension using central BP has cost-savings relating to decreased medication and may be regarded as cost-neutral when factoring in a fee for central BP measurement.

Oral Session 3
Young Investigator Oral Presentations
In association with the European Society of Hypertension Working Group on Vascular Structure and Function

3.1 OUTCOME-DRIVEN THRESHOLDS FOR AMBULATORY PULSE PRESSURE IN 9938 PEOPLE RECRUITED FROM 11 POPULATIONS

Y.-M. Gu 1, T. Hansen 2, K. Björklund-Bodérgård 3, K. Asayama 1,4, Staessen on behalf of the IDACO Investigators JA 1

1University of Leuven, Leuven, Belgium
2Copenhagen University Hospital, Copenhagen, Denmark
3Uppsala University, Uppsala, Sweden
4Tohoku University Graduate School of Pharmaceutical Sciences, Sendai, Japan
5Maastricht University, Maastricht, Netherlands

Background. Evidence-based thresholds for risk stratification based on pulse pressure (PP) are currently unavailable.

Methods. To derive outcome-driven thresholds for the 24-h ambulatory PP, we analyzed 9938 people randomly recruited from 11 populations (47.3% women). After age stratification (<60 vs. >60 years) and using average risk as reference, we computed multivariable-adjusted hazard ratios (HRs) to assess risk by tenths of the PP distribution or risk associated with stepwise increasing (+ 1 mm Hg) PP levels.

Results. Among 6028 younger participants (68,853 person-years), the risk of cardiovascular (HR, 1.58; 95%CI: 1.01, 2.41) or cardiac (HR, 1.52; 95%CI: 0.95, 2.43) events increased only in the top PP tenths (mean, 60.66 mm Hg). Using stepwise increasing PP levels, the lower boundary of the 95% confidence interval of the successive thresholds did not intersect. Among 3910 older participants (39,923 person-years), risk increased (p < 0.028) in the top PP tenths (mean, 76.1 mm Hg). HRs were 1.30 and 1.62 for total and cardiovascular mortality, and 1.52, 1.69 for all cardiovascular, cardiac events. The lower boundary of the 95% confidence interval of the top PP tenth (mean, 64 mm Hg) was 1.69 for all cardiovascular, cardiac events. The lower boundary of the 95% confidence interval of the top PP tenth (mean, 64 mm Hg) was 1.69 for all cardiovascular, cardiac events.

Conclusions. Risk stratification below age 60; in the elderly, PP is a weak risk factor on behalf of the IDACO investigators JA1,5.

3.2 LOCAL ARTERIAL STIFFNESS ASSESSED BY ECHO TRACKING IS NOT ASSOCIATED WITH AN INCREASED PULSE WAVE VELOCITY IN HYPERCHOLESTEROLEMIC RABBIT

M. Isabelle, C. Ragonnet, S. Chimenti, C. Badier-Commander, C. Vayssettes-Courchay, N. Villeneuve, J.-P. Vilaine
SERVICEResearch Institute, Suresnes, France

Arterial stiffness (AS) is generally measured by regional arterial pulse wave velocity (rPWV) or locally by arterial distensibility. Although often used interchangeably, some studies show a weak correlation between these well accepted AS index depending on population. Thus, we aim to investigate in an experimental model of hypercholesterolemic rabbit the comparison between arterial pulse wave velocity and local arterial distensibility. Male New Zealand rabbits (8 week-old) received diet with 0.3% cholesterol for 17 weeks. Under anaesthesia, rPWV was measured with catheters between ascending aorta and iliac artery by the foot-to-foot method. Local arterial stiffness was assessed by echotracking with local PWV using the Moens-Korteweg equation = 1.050*D 1/2, from distensibility as D = A/AxP at different sites: carotid (cPWV), aorta (aPWV and femoral (fPWV). Vessel lesions were analysed by fat red staining.

Table 1 presents the results. As expected, local PWV is comparable in elastic arteries (carotid and aorta) and higher in muscular arteries (femoral artery). Surprisingly, we observe no modification of rPWV and cPWV between the two groups. However, local aPWV and fPWV are increased in hypercholesterolemic rabbits. Only a correlation between the rPWV and local aPWV was observed in control rabbits (r 2 = 0.76 P = 0.02). Vessel plaques are more important in aorta and femoral artery than in carotid artery. In conclusion, in a rabbit model of atherosclerosis, we observe an increase in local arterial stiffness in aorta and femoral artery associated with plaques. However, this local stiffening seems to have a weak impact on regional PWV.

<table>
<thead>
<tr>
<th></th>
<th>rPWV (m/s)</th>
<th>cPWV (m/s)</th>
<th>aPWV (m/s)</th>
<th>fPWV (m/s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>5.0 ± 0.2</td>
<td>6.6 ± 0.4</td>
<td>5.9 ± 0.2</td>
<td>18.8 ± 1.2</td>
</tr>
<tr>
<td>Hyperchol</td>
<td>4.9 ± 0.2</td>
<td>6.7 ± 0.4</td>
<td>6.9 ± 0.3 *</td>
<td>25.9 ± 1.8 *</td>
</tr>
</tbody>
</table>

3.3 TOTAL ARTERIAL ELASTANCE IS MORE STRONGLY ASSOCIATED WITH CARDIOVASCULAR DISEASE THAN CAROTID-FEMORAL PULSE WAVE VELOCITY

C. M. Park, T. Tillin, K. March, N. Chatuvedi, A. D. Hughes
Imperial College London, London, United Kingdom

Background. Arterial stiffness is associated with an increased risk of cardiovascular disease (CVD) and carotid-femoral pulse wave velocity (cPWV) is considered as the ‘gold standard’ measurement method. However cPWV does not assess the stiffness of the proximal aorta and its sensitivity at higher levels of arterial stiffness, such as in the elderly, has been questioned. We compared associations between CVD and cPWV and total arterial elastance (TAE) in a cohort of elderly individuals.

Methods. 961 individuals (69±6yrs; 76% male) underwent echocardiography (Philips iE33), cerebral MRI, cPWV (Pulse Trace) and central blood pressure (Pulseroc) measurements. Central pulse pressure and stroke volume were used to calculate TAE. Coronary heart disease (CHD) was defined as a coronary event or revascularisation identified by medical record review, and adjudicated by an independent committee. Cerebrovascular disease was defined as those with Infarcts (2+) or MRI or adjudicated history of stroke. Associations are presented as odds ratios (OR) (95% confidence intervals) by logistic regression.

Results. A modest correlation was observed between cPWV and TAE ( spearman’s rho = 0.14). Associations with CVD were stronger for TAE than cPWV and subdividing participants based on cPWV had little effect on associations (Table).

![Table](image-url)