



Carotid-femoral pulse wave velocity estimated by an ultrasound system

Submitted by Mathieu Collette on Sun, 07/06/2014 - 18:43

Titre Carotid-femoral pulse wave velocity estimated by an ultrasound system
Type de publication Communication
Type Communication avec actes dans un congrès
Année 2013
Langue Anglais
Date du colloque Jan-09-2013
Titre du colloque Artery Research
Numéro 3-4
Volume 7
Auteur Collette, Mathieu [1], Morizzo, C. [2], Kozakova, M. [3], Palombo, C. [4], Lefthériotis, Georges [5]
Editeur Elsevier

Résumé en anglais

To date, regional aortic stiffness can be evaluated by the reference tonometric technique via the pulse wave velocity (PWV) measured in two points: the carotid and the femoral arteries. Based on a similar intersecting tangent algorithm, we have developed a new method for the determination of carotid-femoral PWV using a high-resolution echo tracking ultrasound system. Herein, PWV can be computed from the measurement of the transit time between the foot of the carotid diameter waveform and the foot of the femoral diameter waveform.

The study was carried out on 50 consecutive patients at rest (29 men, mean age 30 ± 18 yrs) recruited on the occasion of a vascular screening for atherosclerosis. Carotid-femoral PWV was determined by a trained operator using a tonometric technique, (PWVpp, PulsePen, Italy), and an echotracking ultrasound system, (PWVus, e-tracking Alpha 10, Aloka, Japan). Relationship between PWVpp and PWVus was evaluated by linear regression.

A Pearson's correlation coefficient of $r=0.95$ was found between both variables (95% confidence interval 0.90-0.99; $P<0.0001$; $PWVus= 0,91*PWVpp+0.44$). The Bland-Altman plot comparing PWVpp and PWVus showed a systematic offset of -0.07 m.s-1 with a limit of agreement from $-1,33$ to $1,19$ m.s-1.

Our results show an excellent and significant correlation between both techniques which confirms that ultrasound system can provide a reliable estimate of the regional aortic stiffness like the tonometric technique does. Additional studies are now needed to show the simplicity of the measurement using ultrasound system while maintaining reliability even in overweight patients.

URL de la notice <http://okina.univ-angers.fr/publications/ua3406> [6]

DOI 10.1016/j.artres.2013.10.199 [7]

Liens

[1] <http://okina.univ-angers.fr/m.collette/publications>

[2] [http://okina.univ-angers.fr/publications?f\[author\]=4725](http://okina.univ-angers.fr/publications?f[author]=4725)

- [3] [http://okina.univ-angers.fr/publications?f\[author\]=4726](http://okina.univ-angers.fr/publications?f[author]=4726)
- [4] [http://okina.univ-angers.fr/publications?f\[author\]=4727](http://okina.univ-angers.fr/publications?f[author]=4727)
- [5] <http://okina.univ-angers.fr/g.lefther/publications>
- [6] <http://okina.univ-angers.fr/publications/ua3406>
- [7] <http://dx.doi.org/10.1016/j.artres.2013.10.199>

Publié sur *Okina* (<http://okina.univ-angers.fr>)