Risk Stratification of Patients with Peripheral Arterial Disease and Abdominal Aortic Aneurysm Using Aortic Augmentation Index

Marianne Beckmann, Vincenzo Jacomella, Malcom Kohler, Mario Lachat, Amr Salem, Beatrice Amann-Vesti & Marc Husmann

BACKGROUND
Central augmentation index (cAIx) is an indicator for vascular stiffness. Obstructive and aneurysmatic vascular disease can affect pulse wave propagation and reflection, causing changes in central aortic pressures.

AIM
To assess and compare cAIx in patients with peripheral arterial disease (PAD) and/or abdominal aortic aneurysm (AAA).

METHODS
cAIx was assessed by radial applanation tonometry (Sphygmocor) in a total of 184 patients at a tertiary referral centre. Patients were grouped as having PAD only, AAA only, or both AAA and PAD. Differences in cAIx measurements between the three patient groups were tested by non-parametric tests and stepwise multivariate linear regression analysis to investigate associations with obstructive or aneurysmatic patterns of vascular disease.

RESULTS
In the study sample of 184 patients, 130 had PAD only, 20 had AAA only, and 34 patients had both AAA and PAD. Mean cAIx (%) was 30.5 ± 8.2 across all patients. It was significantly higher in females (35.2 ± 6.1, n = 55) than males (28.4 ± 8.2, n = 129), and significantly higher in patients over 80 years of age (34.4 ± 6.9, n = 22) than in those under 80 years (30.0 ± 8.2, n = 162). Intergroup comparison revealed a significant difference in cAIx between the three patient groups (AAA: 27.3 ± 9.5; PAD: 31.4 ± 7.8; AAA & PAD: 28.8 ± 8.5). cAIx was significantly lower in patients with AAA, higher in patients with both AAA and PAD, and highest in patients with PAD only (beta = 0.21, p = 0.006).

CONCLUSION
Non-invasive assessment of arterial stiffness in high-risk patients indicates that cAIx differs according to the pattern of vascular disease. Measurements revealed significantly higher cAIx values for patients with obstructive peripheral...
arterial disease than for patients with aneurysmatic disease.

type: journal paper/review (English)
date of publishing: 09-10-2015
journal title: PLoS ONE (10/10)
ISSN electronic: 1932-6203
pages: e0139887