

The correlation between the augmentation index and walking capacity in patients with peripheral arterial disease, with and without intermittent claudication

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Abstract

Background. The need to establish a strategy for the evaluation of patients with atherosclerosis and peripheral arterial disease (PAD), based on the knowledge of correlations between different parameters that characterize the disease.

Aims. Analysis of the correlation between functional parameters and arterial stiffness parameters in patients with peripheral arterial disease of the lower limbs, with and without symptoms of claudication.

Method. In 46 patients with atherosclerosis and PAD with and without intermittent claudication, diagnosed by detecting an ankle-arm index less than or equal to 0.9, we determined the augmentation index as a measure of arterial stiffness and ability to walk, by determining the distance walked for 6 minutes, during April-May 2012. The Pearson method was used for linear regression analysis and the threshold of statistical significance chosen was $p \leq 0.05$.

Results. Between patients with stage I (no claudication) and those with stage II (claudication), significant differences in terms of augmentation index ($32,54 \pm 6,61$ to $40,66 \pm 7,46$; $p=0.0004$), 6 minute walk test ($383 \pm 22,90$ vs $312 \pm 54,48$, $p=0.0001$) and ankle-arm index (0.77 ± 0.01 vs 0.60 ± 0.080 , $p=0.001$) were discovered. There was a weak correlation between the augmentation index and the 6 minute walk test in the 46 patients with PAD (index of determination $R^2=0.40$). However, if patients were divided into two subgroups according to sex, the correlation between the two variables significantly increased: in women: $R^2=0.62$, $p=0.001$, in men: $R^2=0.67$, $p=0.001$. The augmentation index was significantly higher in women than in men ($40,76 \pm 8,48$ to $34,33 \pm 6,76$, $p=0.006$), while there were no significant differences in the other measured parameters.

Conclusions. In patients with PAD with claudication, the augmentation index as a measure of arterial stiffness is higher and the walking ability is lower than in those who do not have claudication. There is a correlation between the two parameters, which significantly increases if the two sexes are examined separately, while the augmentation index is higher in women than in men.

Keywords: arterial stiffness, walking ability, peripheral arterial disease.