

Abstract: Arterial stiffness represented by carotid-femoral pulse wave velocity (PWV) is considered to be an independent cardiovascular risk factor. This study was focused on large artery properties investigation in specific forms of hypertension using applanation tonometer Sphygmocor (Atcor Medical). PWV was significantly higher in resistant hypertension patients when compared to moderate essential hypertension (EH) patients. This difference appears to be independent of clinical blood pressure (BP). Night-time BP appears to be a more accurate predictor of PWV in EH. In another study we demonstrated that primary hyperparathyroidism (PH) (both hypertensive or non-hypertensive forms) might be associated with higher PWV when compared to EH patients or to normotensive controls and that this difference is independent of age and clinical BP. Neither calcium serum level, nor parathyroid hormone has been associated with PWV. Specific treatment by parathyroidectomy (PTX) seems to be beneficial for PWV decrease, which might be mainly determined by improved BP control after surgery. Since PTX indications for asymptomatic forms of PH have been discussed, our data suggest the potential benefit to the extent of subclinical organ damage after surgical treatment in these patients. Similarly, we proved higher PWV in patients with primary aldosteronism (PHA). Surgical treatment of PHA leads to a significant decrease of BP and PWV, whereas the conservative treatment with spironolactone was inferior to adrenalectomy in decreasing BP and PWV. Patients with benign pheochromocytoma have increased PWV in comparison with healthy controls. Age, mean blood pressure, hs-CRP and urine norepinephrine were independent predictors of PWV in these patients. The study also showed that all these abnormalities, including PWV, are entirely reversed after successful tumor removal. These studies, which are aimed at investigating the arterial stiffness assessed by aortic PWV in the specific forms of hypertension show the importance of this investigation in higher cardiovascular risk patients identification. Moreover, the results emphasize the effect of specific treatment in blood BP control and in cardiovascular risk reduction if harmful hormone overproduction is removed.

Keywords: arterial hypertension, pulse wave velocity, arterial stiffness, resistant hypertension, primary hyperparathyroidism, primary aldosteronism, pheochromocytoma