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The independent association of two “priceless” parameters: pulse pressure and red cell distribution width in recently diagnosed hypertensive patients

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Abstract

Background: Red cell distribution width (RDW), a parameter of complete blood count in routine clinical practice is independently and positively associated with cardiovascular (CV) risk and it is elevated in hypertensive patients. Pulse pressure (PP) is independent predictor of CV events suggesting a stiffened aorta. We aimed to study the relationship of RDW with target organ damage indices in middle-aged patients with mild to moderate essential hypertension.

Methods: We studied 135 non-diabetic, recently diagnosed and never-treated patients with essential hypertension (mean age 48+11 years, 90 males) divided in two groups regarding the cutoff of PP $\geq$60 mmHg. We evaluated carotid-femoral artery pulse wave velocity (PWV), carotid intima-media thickness (IMT), 24h microalbumin levels (MAU), cardiac hypertrophy (LVMI) and coronary flow reserve (CFR).

Results: RDW was related with office PP in total population (r= 0.25, p=0.006) and in hypertensives with PP $\geq$ 60 mmHg (r= 0.33, p=0.02). In a linear regression analysis where age, weight, smoking, mean blood pressure (BP) and office PP were included as independent variables, an independent relationship between RDW and office PP (Beta=0.22, p=0.01) was revealed regarding the total population. Finally, using ROC analysis we found that a cutoff of RDW >13.25% predicted office PP $\geq$60mm Hg.

Conclusions: Increased RDW independently and positively relates only to impaired arterial stiffness, expressed by office PP, in middle-aged, recently diagnosed, untreated patients with essential hypertension. In every day clinical practice, a physician might support information regarding arterial stiffness from a BP measurement by evaluating a complete blood count.