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The influence of non-dipping pattern of blood pressure in gestational hypertension on early onset of hypertension later in life

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Background: It is known that gestational hypertension (GH) and preeclampsia have been associated with the onset of hypertension later in life. We wondered if the blood pressure (BP) pattern affects the incidence of hypertension in the future. Purpose: The aim of this study was to determine whether hypertension occurs more frequently if a non-dipping pattern was registered during GH, but also if non-dipping pattern in GH affects deterioration of systolic function of the left ventricle (LV) later in life. Methods: This longitudinal study included 56 pregnant women with gestational hypertension (of which 28 met criteria for non-dipping pattern of BP, according to the values registrated by the ambulatory blood pressure monitoring (ABPM) – non-dippers, while other 28 were classified in dippers) and 27 normotensive pregnant women, as control. All of women became normotensive after delivery, but they continued to be periodically controlled in term of values of blood pressure. The function and morphology of the left ventricle (LV) were analyzed by echocardiography exam in the third trimester of pregnancy and 5 years after delivery, as well as ABPM, while 2D longitudinal strain (LS) was performed only after delivery in order to evaluate systolic function of the LV. All echo and ABPM parameters recorded during pregnancy, also as parameters of pregnancy outcome – intrauterine growth restriction (IUGR) and preterm delivery, were analyzed, in order to relate them with later onset of hypertension. Results: After, average 5 years, diagnosis of hypertension was determined in 8 women (2 from dipper group – during pregnancy - 7,1%, and 6 from non-dipper group 21,4%). Those 8 hypertensive women had significantly reduced LS: -18,12 ± 1,3 compared to normotensive -19,9 ± 1,4 (p=0,001). It is very interesting that, 5 years after delivery, values of 2D LS were, although in reference values, significantly reduced in women who were non-dippers (-19,32 ± 1,38) during GH, compared with both, normotensive (-20,69 ± 1,18; p < 0,0005) and dippers (-20,10 ± 1,29; p = 0,026). Univariate regression analysis revealed that higher values of day and night BP, the mean arterial BP, LV mass index, preterm delivery and IUGR were associated with onset of hypertension later in life, while parameters of systolic and diastolic function of the LV during pregnancy, didn’t affect occurrence of it. As revealed by multivariate regression analysis, the peak value of night-time diastolic blood pressure during pregnancy (p = 0,016; OR = 1,127; 95% CI 1,022-1,242) and the LV mass index, also during pregnancy (p = 0,041; OR = 1,099; 95% CI 1,004-1,203) had strong relation with hypertension in future life. Conclusion: The non-dipping pattern of blood pressure in gestational hypertension is significant associate with onset of hypertension later in life, but also with decreased systolic function of the left ventricle.