

## ORIGINAL ARTICLE

### First trimester screening of circulating C19MC microRNAs can predict subsequent onset of gestational hypertension

### Prvotrimestrální screening cirkulujících C19MC mikroRNA predikuje pozdější výskyt gestační hypertenze

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**Objective:** The objective of the study was to evaluate risk assessment for gestational hypertension based on the profile of circulating placental specific C19MC microRNAs in early pregnancy.

**Study design:** The prospective longitudinal cohort study of women enrolled at first trimester screening at 10 to 13 weeks was carried out (n=267). Relative quantification of placental specific C19MC microRNAs (miR-516-5p, miR-517\*, miR-518b, miR-520a\*, miR-520h, miR-525 and miR-526a) was determined in 28 normal pregnancies and 18 pregnancies which developed gestational hypertension using real-time PCR and a comparative Ct method relative to synthetic *C. elegans* microRNA (cel-miR-39).

**Results:** Increased extracellular C19MC microRNA plasmatic levels (miR-516-5p,  $p < 0.001$ ; miR-517\*,  $p = 0.007$ ; miR-520h,  $p < 0.001$ ; miR-518b,  $p = 0.002$ ) were detected in patients destined to develop gestational hypertension. MiR-520h had the best predictive performance with a PPV of 84.6% at a 7.1% false positive rate. The combination of miR-520h and miR-518b was able to predict 82.6% of women at the same false positive rate. The overall predictive capacity of single miR-518b (73.3% at

14.3% FPR), miR-516-5p (70.6% at 17.9% FPR) and miR-517\* (57.9% at 28.6% FPR) biomarkers was lower.

**Conclusion:** The study brought interesting finding that the up-regulation of miR-516-5p, miR-517\*, miR-520h and miR-518b is associated with a risk of later development of gestational hypertension. First trimester screening of extracellular miR-520h alone or in combination with miR-518b identified a significant proportion of women with subsequent gestational hypertension.

#### Literature

Hromadnikova I, Kotlabova K, Hympanova L, Doucha J, Krofta L. First Trimester Screening of Circulating C19MC microRNAs Can Predict Subsequent Onset of Gestational Hypertension. PLoS One. 2014 Dec 15;9(12):e113735. doi: 10.1371/journal.pone.0113735. eCollection 2014.

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