Abstract

MicroRNAs (miRNAs) are small non-coding RNAs with a length of 18 to 25 nucleotides playing a pivotal role in post-transcriptional regulation of gene expression. There are miRNAs whose expression is limited to a certain tissue type and diseases which are characterized by a unique miRNA expression profile. I assumed spontaneous preterm birth (PTB) and preterm prelabor rupture of membranes (PPROM) would be characterized by a unique miRNA expression profile.

I observed the gene expression of 15 placental specific miRNAs (miR-512-5p, miR-515-5p, miR-516b-5p, miR-517-5p, miR-518b, miR-518f-5p, miR-519a-5p, miR-519d-3p, miR-519e-5p, miR-520a-5p, miR-520h, miR-524-5p, miR-525-5p, miR-526a and miR-526b-5p) in placental tissue of pacients with PTB, PPROM and women with term in labor pregnancies (FG). PTB group consisted of 24 pacients, PPROM group of 75 pacients and FG group of 20 pacients. Quantitative real-time PCR was used to quantify gene expression. In the group of PTB pregnancies I identified 3 significantly upregulated miRNAs (miR-516b-5p, miR-519d-3p and miR-524-5p) and 4 miRNAs (miR-518b, miR-519a-5p, miR-520h and miR-526a) with a trend to upregulation compared to controls (FG). In the group of PPROM pregnancies I identified 3 miRNAs (miR-519d-3p, miR-520h and miR-256b-5p) with a trend to downregulation compared to controls. 5 significantly upregulated miRNAs (miR-516b-5p, miR-518b, miR-519d-3p, miR-520h and miR-526a) were detected in PTB pregnancies compared to PPROM. The group of PTB pregnancies showed a trend to upregulation for 2 miRNAs (miR-519a-5p and miR-524-5p).

Within the group of patients with PPROM neither presence of histological chorioamnionitis or microbial invasion of the amniotic cavity affected expression of any of the tested miRNAs. In the group of patients with PTB there wasn´t any correlation between gene expression of studied miRNAs and gestational age at delivery. Conversely, in the group of patients with PPROM a weak negative correlation between gene expression of all tested miRNAs and gestational age at delivery was observed.

According to results of the thesis there is a difference between a patogenesis of PTB and PPROM. PTB and PPROM differ in an expression profile of C19MC microRNAs in placental tissue. The upregulation of C19MC microRNAs is characteristic for PTB and downregulation of C19MC microRNAs for PPROM.