Abstrakt

Background: Premature birth is a birth between 24th and 37th gestational weeks. Risk of preterm birth is in an increase of perinatal morbidity and mortality. Approximately in 3% of all pregnancies premature rupture of membranes (preterm premature rupture of membranes, PPROM) occurs. PPROM is responsible roughly for one-third of premature births. Among the important risk factors of PPROM infection is considered.

The innate immunity has the decisive influence on the type and intensity of immune response to the microorganism present in the cavity, and is in particularly responsible for identifying the PAMP, pathogen-associated molecular patterns by specific receptors (PRR). The most important PRR are TLR receptors. They are primarily membrane expressed, although due to influence of many variable factors they can be shed from the membrane and can act in a soluble form. The aim of study our study is to measure the levels of soluble forms of PRR, especially sTLR2 sTLR4 and in amniotic fluid of patients with PPROM and to evaluate their possible diagnostic significance.

Methods: The study included 44 pregnant women with gestational age between 24th and 36th weeks gestation, of whom 23 patients had histologically documented chorioamnionitis. From this group, 9 patients had particularly severe inflammation, funisitis. The remaining 21 patients were free of inflammation. Furthermore, the amniotic fluid samples were taken from three other groups of patients.

The first group were patients with normal physiological childbirth running (n = 10). Another group were, patients with term pregnancy, the birth has not yet started (n = 10). The last group of patients were in the II.nd trimester of physiological pregnancy (n = 10). Sampling of amniotic fluid was performed by ultrasound-guided puncture in the course of the abdominal amniocentesis or within premature rupture of membranes or during childbirth. The histological examination for the presence of chorioamnionitis and funisitis was performed at the Fingerland Institute of

Pathological Anatomy University Hospital and Faculty of Medicine Hradec Kralove. The concentration of sTLR2 sTLR4 in amniotic fluid was established by a sandwich ELISA using commercial kits (Uscn Life Science & Technology Company, China). The statistical evaluation of the obtained data was made by software Microsoft Office Excel MedCalc (Belgium) and Internet applications and http://dittami.gmxhome.de/shapiro/ http://www.fon.hum.uva.nl/ Service / Statistics / Wilcoxon_ Test.html.

Results: When comparing the values of both sTLR2 and sTLR4 in the samples of patients without inflammation in amniotic fluid to samples of patients with inflammation ($p = 0.00003925$ for sTLR2, and $p = 0.0000171$ for sTLR4) the statistically significantly lower measures were found.

When comparing values of sTLR2 and sTLR4 in amniotic fluid taken from patients without funisitis compared to values found in patients with funisitis the statistically significant differences were also found being higher ($p = 0.000109$ for sTLR2, and $p = 0.0006999$ for sTLR4). With statistical methods of ROC (Receiver Operating Characteristic Curve) optimal cut-off values for both parameters were determined. For the soluble form of TLR2 was found the optimal value of 128.7 ng / ml, which was achieved very good test, 95.2% specificity (sensitivity 69.6). Slightly better values reached the soluble form of TLR4 examinations when using the ROC analysis was determined the optimal positivity threshold 31.7 ng / ml (sensitivity 82.6 and specificity 95.2).

Conclusions: Detectable levels of amniotic fluid sTLR are found even in physiological pregnancy without the presence of inflammation. The levels of sTLR in amniotic fluid collected during normal pregnancy are rising. Determination of soluble forms of TLR receptors appears to be beneficial biomarker for diagnosis of infectious origin of ongoing inflammatory reaction in intraamnial cavity. As a results of our work, the limits of sensitivity and specifity both parameters were determined by ROC analysis.