SUMMARY

Preterm prelabor rupture of membranes (PPROM) is responsible for approximately 30% of all preterm deliveries. Histological chorioamnionitis (HCA) has been found in 50-80% of PPROM cases and is associated with higher rates of adverse maternal and neonatal outcome.

The scavenger receptor for hemoglobin (CD163) is a transmembrane glycoprotein expressed almost exclusively on monocytes and macrophages. Its main function is the binding of hemoglobin–haptoglobin complexes. CD163 also serves as a surface receptor that recognizes intact bacteria and triggers cytokine production function. Moreover, it participates in the late down-regulatory phase of both acute and chronic inflammation. The soluble form of CD163 (sCD163) most likely represents the extracellular domain of CD163, which can be shed from the surface and released into the body fluid.

The main aim of this thesis was to investigate sCD163 in pregnancy complicated by PPROM and relationships with HCA and funisitis.

The first specific aim was to determine amniotic fluid sCD163 levels in uncomplicated pregnancies. Amniotic fluid samples were taken from 31 women who underwent amniocentesis for genetic testing in the second trimester, as well as from 32 women at term, 21 of whom had and 11 of whom did not have uterine contractions. The sCD163 levels in amniotic fluid were determined with sandwich enzyme-linked immunosorbent assay (ELISA) technique. Amniotic fluid sCD163 levels were inversely related to gestational age.

The second specific aim was to evaluate amniotic fluid sCD163 levels in PPROM pregnancies and relationships with HCA and funisitis. Amniotic fluid was retrieved by transabdominal amniocentesis from 89 women and analyzed with ELISA technique. Amniotic fluid levels of sCD163 were higher when in cases with HCA and further increased in cases with funisitis. The observed likelihood ratio (LR) of 5.5 for the prediction of HCA in PPROM suggested that amniotic fluid sCD163 is a valuable clinical marker.

The third specific aim was to evaluate umbilical cord blood levels in PPROM pregnancies, and relationships with HCA and funisitis. A total of 86 women were

enrolled in the study. Umbilical cord blood samples were obtained at delivery and sCD163 levels were determined with ELISA technique. Umbilical cord blood sCD163 levels were higher in cases with HCA and funisitis. The LR of 1.8 for the prediction of histological chorioamnionitis and 2.3 for the prediction of funisitis prevented them from being useful clinical markers for early postpartum detection.

The fourth specific aim was to examine the distribution of CD163-positive ($CD163^+$) cells in the placenta and fetal membranes in PPROM pregnancies with and without HCA. Placenta and fetal membrane samples from 52 women with PPROM were evaluated by immunohistochemistry. $CD163^+$ cells were found in all compartments of the placenta and fetal membranes, regardless of inflammatory status. HCA was associated with a higher amount of $CD163^+$ cells in subchorionic fibrin and the chorionic plate.

The overall conclusion of this thesis is that HCA and funisitis, in PPROM pregnancies is associated with increased sCD163 levels in amniotic fluid and umbilical cord. Measuring sCD163 in amniotic fluid might be a clinically applicable method for prenatal detection of HCA.