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P0519 Evaluation of lipocalin-2 as a biomarker of inflammation in pregnant women with preterm labour

Andrea Vergara Gomez*[1], Elisa Rubio[1], Assumpta Fasanella[1], Teresa Cobo[2], Climent Casals[3], Jordi Vila[3], Jordi Bosch[3]

[1] Department of Clinical Microbiology, CDB, Hospital Clínic of Barcelona – University of Barcelona, Barcelona, Spain, [2] BCNatal - Barcelona Center for Maternal-Fetal and Neonatal Medicine (Hospital Clínic and Hospital Sant Joan de Deu), Fetal i + D Fetal Medicine Research Center, IDIBAPS, University of Barcelona, Barcelona, Spain, [3] Department of Clinical Microbiology, CDB, Hospital Clínic of Barcelona – University of Barcelona - ISGLOBAL, Barcelona, Spain

Background: Preterm labour with intact membranes (PTL) is a major cause of spontaneous preterm birth. The occurrence of microbial invasion of the amniotic cavity (MIAC) and sterile intraamniotic inflammation (IAI) are related to a worse perinatal outcome. In most cases, no microorganism is isolated and therefore the diagnosis might be suspected based on high levels of interleukin-6 (IL-6) or other markers of inflammation (e.g. leukocytes) in the amniotic fluid (AF). We evaluated the use of AF lipocalin-2 (LCN2), a well-characterised neutrophil-secreted protein, as a potential biomarker of MIAC and steril IAI.

Materials/methods: Sixty-three patients with PTL were included and categorized into 3 groups according to AF analysis: MIAC (positive amniotic fluid culture and/or detection of microbial 16S ribosomal RNA); steril IAI (AF IL-6 ≥13.4 ng/mL without MIAC); and control (no MIAC no steril IAI). AF LCN2 was determined using a modified enzyme immunoassay coupled with chemiluminescence (Architect).

Results: Twenty-three women presented MIAC; 17 steril IAI; and 23 were controls. The median (IQR) concentration of LCN2 was 2,196 ng/mL (356-5,323) in the MIAC group, 2,103 (356-3,012) in the steril IAI group and 150 (92-283) in the control group. There was a strong direct correlation between IL-6 and LCN2 levels ($r = 0.76$, $P<0.001$). In most cases, when a microorganism was isolated, the concentration of both biomarkers was high. Both biomarkers distinguished the control group from MIAC and IAI groups, but did not discriminate MIAC from IAI group. The number of AF leukocytes was better correlated with the LCN2 concentration ($r = 0.64$, $P<0.001$) than with the IL-6 concentration ($r = 0.53$, $P<0.001$).

Conclusions: AF LCN2 can be used to identify those women with PTL and MIAC or steril IAI. LCN2 correlates well with IL-6 but the combination of both biomarkers did not improve their diagnostic performance. In comparison to the current IL-6 test in ELISA or lateral flow immunoassay format, LCN2 determination is both rapid (1 hour) and quantitative, allowing for potential risk stratification.