Can Non-Invasive Sampling Determine the Inflammatory Status of the Intra-uterine Environment?

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Background and Objective:

- Previous studies have shown that the amniotic fluid cytokine profile is predictive of pregnancy outcome in patients at risk for preterm delivery.

- Currently, determination of the intra-amniotic inflammatory milieu requires invasive testing with its associated risks. Perhaps a better understanding of the causes of preterm labor and effects of treatment can be achieved if the inflammatory status could be determined in a non-invasive manner.

Conclusions:

- In term, non-laboring patients, there does not appear to be correlation of inflammatory mediators between amniotic fluid and non-invasive maternal-fetal compartments.

- From these patients, none of the remaining non-invasive compartments were significantly correlated with amniotic fluid.

- None of the remaining non-invasive compartments were significantly correlated with each other.

Background and Objective:

- To determine the differential expression of inflammatory mediators in various maternal-fetal compartments and identify the best non-invasive sampling that can predict the intra-uterine environment.

STUDY DESIGN: Term, non-laboring patients without major maternal or fetal complications undergoing cesarean delivery were asked to provide samples during the immediate pre-operative and intra-operative period: maternal plasma via needle aspiration of the intact amniotic sac after hysterotomy. These fluids were analyzed for 27 inflammatory mediators using the Bio-Plex array. We compared the inflammatory mediator profile among the various compartments as well as mediator levels from non-invasive samples (maternal blood, urine, saliva, vaginal and cervical secretions) with invasive sampling (amniotic fluid). Correlation among mediators in the various compartments was determined using Spearman correlation with \( P < 0.05 \) required for significance.

RESULTS: Twenty patients were included in this study. Among the non-invasive compartments studied, none of the inflammatory mediators were significantly correlated with amniotic fluid. When comparing cervical secretions to vaginal (posterior fornix) secretions, 25 of the 27 mediators reached a significant correlation, with correlation co-efficients ranging from 0.460 to 0.943. None of the remaining non-invasive compartments were significantly correlated with each other.

CONCLUSION: In term, non-laboring patients, there does not appear to be correlation of inflammatory mediators between amniotic fluid and non-invasive maternal-fetal compartments. It remains to be determined if this finding is the same in preterm pregnancies or in the presence of labor. There is no difference in the inflammatory mediator profile between cervical and posterior fornix vaginal secretions.