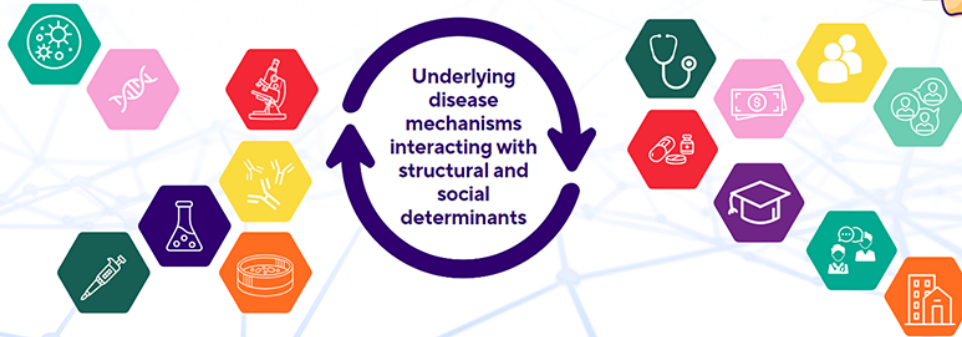




19TH ANNUAL CHILD HEALTH RESEARCH DAYS
Outcomes in Child Health



October 25 + 26, 2023 | RBC Convention Centre, Winnipeg, Manitoba

Abstract Submission Form

CHR D 2023: Abstract Submission Form

Submitter Name
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Presenter Name
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Research Category
Basic Science

Presenter Status
Masters Student

Role in the project
Design
Perform Experiments
Analyze Data
Write Abstract

Title
Amniotic Fluid as Mediator of the Maternal Environment and The Fetal Lung

Background
Babies exposed to cigarette smoke (CS) in-utero are at higher risk for developing chronic lung disease. Bridging the maternal environment and fetus is the amniotic fluid (AF), which interacts with the developing lungs. Currently, basal AF cytokine profiles and whether the maternal environment alters it has not been studied. In the context of CS exposure, alterations in AF cytokines may contribute to risk for future lung disease.

Objective
The aim of the study is to determine the cytokine profile of AF, how it relates to other tissue compartments in pregnancy, and if it is altered by CS.

Methods
AF and blood (maternal/cord) were collected from consenting patients undergoing a term cesarean delivery. To measure CS exposure, cotinine levels were measured using an enzyme-linked immunosorbent assay. Cytokine/chemokine profiles were measured using a 96-plex cytokine assay (Eve Technologies™) and profiles in AF and blood were compared using partial least squares-discriminant analysis. Cotinine positive samples were compared using a t-test. Data is presented as mean±SD.

Results
Samples come from participants with diverse ethnic backgrounds, a median age of 35 and gestational age

of 38.9 weeks. Cotinine was found in three AF samples at levels 38% higher than in maternal blood ($p < 0.05$). The cytokine profile of AF was distinct from cord blood and maternal blood, with AF having higher levels of IL-1RA (30-, 118-fold), IL-15 (11-, 16-fold) and IL-6 (67-, 378-fold, relative to cord and maternal blood respectively). Cotinine positive AF had over 3-fold higher levels of IL-6 relative to cotinine negative ($p < 0.0001$).

Conclusion

AF has a distinct cytokine/chemokine profile from maternal blood and cord blood. Exposure to CS during pregnancy leads to bioaccumulation of cotinine and elevation of IL-6 in the AF. These results may provide novel insights into the role AF plays in the developmental origins of chronic respiratory disease.

Table/Figure File

John Paul Aguilar - Supplementary Table PDF.pdf

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John Paul Aguilar – Supplementary Table

	Amniotic Fluid (ng/mL)	Maternal Blood (ng/mL)	Cord Blood (ng/mL)
Cotinine Levels	45.77±2.87	33.25±1.04	24.03±4.24

Cytokine	Amniotic Fluid (pg/mL)	Maternal Blood (pg/mL)	Cord Blood (pg/mL)
IL-1RA	1577±413	13.34±8.59	52.65±92.74
IL-15	47.30±24.39	2.82±1.93	4.25±2.20
IL-6	863±608	2.23±1.71	12.74±9.12