**THE INFLUENCE OF MATERNAL CORTISOL AND EMOTIONAL STATE DURING PREGNANCY ON FETAL INTRAUTERINE GROWTH**

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**OBJECTIVE**

- **Aim**: Investigate the influence of maternal cortisol & emotional state during pregnancy on fetal intrauterine growth.
- **Expectation**: Higher fetal cortisol levels, or more depressive and anxious complaints during pregnancy, associated with slower IUG and lower birth weight.

**METHOD**

- **Inclusion at University Hospitals Leuven (n = 100)**
  - 8-12 weeks pregnant

- **Exclusion**: Somatic disorders/medication interfering with HPA-axis (n = 7)

- **Exclusion**: Multiple pregnancies (n = 91)

Mothers were seen once each trimester at the outpatient clinic:
1. Psychological assessments consisted of:
   - Edinburgh Postnatal Depression Scale (EDPS), Hospital Anxiety and Depression Scale (HADS-A & HADS-D), Pregnancy Related Anxiety Questionnaire (PRAQ) & Maternal Fetal Attachment Scale (MFAS).
   - The diurnal cortisol profile was derived from the saliva samples taken at 2 consecutive days.
2. IUG was evaluated using ultrasound.

**STATISTICAL ANALYSIS**

Was performed using SPS517.0. In each trimester a univariable model as well as a multiple regression model was used to predict IUG measures and birth weight. To reduce the number of predictors in the regression models, three principal component analyses (PCA) were performed; i.e. on variables measuring:
- (1) anxiety (HADS-A & PRAQ subscales),
- (2) depression (EDPS & HADS-D), and
- (3) attachment (MFAS).

Cortisol ['area under the curve', AUG] was used as a fourth predictor. Relevant covariates (p<0.05) were included in the regression models.

**RESULTS**

**UNIVARIABLE & MULTIPLE REGRESSION MODEL**

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Body Weight</th>
<th>BMI-Birth</th>
<th>Pandal Index Birth</th>
<th>1st Trim.</th>
<th>2nd Trim.</th>
<th>3rd Trim.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cortisol</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attachment</td>
<td>✓</td>
<td></td>
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</tbody>
</table>

- Cortisol significantly predicted the variance of weight and BMI at Birth
- Depressive symptoms influenced the variance of BMI and Ponderal Index at birth
- A depressive profile was an important predictor in the univariable models of head circumference at third trimester and birth as well as the abdominal – head circumference ratio.

**CONCLUSION**

- Basal cortisol levels had a significant influence on several growth variables in the 2nd trimester and on the growth trajectories between 2nd and 3rd trim.
- Attachment significantly influenced the growth trajectories between 2nd and 3rd trimester.
- Attachment & Depressive symptoms were important for fetal growth in 3rd trimester as well.

Evidently, these are exploratory data in a relatively small sample size, and replication in further studies is needed.