Establishing the relationship between third-trimester fetal abdominal circumference, birthweight and neonatal morbidity in gestational diabetes

Maria Teresa Pereira, Susana Garrido, Raquel Almeida, Joana Vilaverde, Fernando Piche, Clara Pinto, Joaquim Gonçalves, Jorge Dores

1Division of Endocrinology, Diabetes and Metabolism; 2Division of Nutrition; 3Division of Obstetrics. Centro Hospitalar do Porto, Porto, Portugal

INTRODUCTION

Gestational diabetes (GD) is associated with a significantly higher risk of perinatal complications. It has been suggested that third-trimester (3rdT) fetal abdominal circumference (AC) determination is an important predictor of macrosomia and large for gestational age (LGA).

OBJECTIVE

The purpose of this study was to evaluate the association between the 3rdT AC percentile with birthweight (BW) and adverse neonatal outcomes in a cohort of women with GD.

METHODS

- We retrospectively analyzed the AC percentile of the 3rdT ultrasound screening in pregnant women with GD within a 2-years period in a central university hospital;
- We enrolled 268 pregnant women with singleton pregnancy undergoing routine fetal biometry after 28 weeks;
- We considered adverse neonatal outcomes: macrosomia (BW > 4 Kg), LGA1, small for gestational age1 (SGA), neonatal hypoglycemia and neonatal morbidity compositum (neonatal hypoglycemia and hyperbilirubinemia, sepsis, admissions in ICU, neonatal respiratory distress syndrome, prematurity, traumatic delivery);
- The relationship between AC and BW was explored using the Spearman’s correlation;
- The relationship between AC percentile groups (<50; ≥50) and adverse neonatal outcomes was performed using the Fisher’s exact test.

RESULTS

Table 1: Descriptive analysis of some demographic and clinical variables (median; min-max)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Median (min-max)</th>
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<tbody>
<tr>
<td>Age, yrs</td>
<td>33 (17-52)</td>
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<tr>
<td>3rdT fetal biometry, weeks</td>
<td>36 (29-40)</td>
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<tr>
<td>AC percentile, %</td>
<td>50 (1-100)</td>
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<tr>
<td>Delivery week, weeks</td>
<td>39 (29-41)</td>
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<tr>
<td>BW, g</td>
<td>3165 (1370-4450)</td>
</tr>
</tbody>
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Table 2: Adverse neonatal outcomes, n and %

Table 3: Adverse neonatal outcomes differences between AC percentile groups (<50; ≥50), n and %

CONCLUSIONS

- The intrapartum AC measurement was useful on the screening of fetal macrosomia and LGA;
- These results suggest that AC measured by ultrasound can help to predict the BW and seems to be a valuable parameter to be included when we evaluate a gestational diabetic pregnant woman in order to decide the intensity of maternal hyperglycemia treatment;
- The 3rdT fetal biometry ultrasound week does not appear to influence the occurrence of adverse neonatal outcomes.