Study the role of maternal irisin levels with preterm and term delivery

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Abstract

In this study conducted in Baghdad for the period from February 2017 to the end of December 2017, which included 100 pregnant women who had regular contractions and/or short cervical cervices between 24 to 32 weeks of pregnancy and 100 healthy controls who did not suffer from complications Pregnancy and they were delivered on time. For the purpose of comparing the two groups with respect to the level of Irisin. The study included collecting blood samples from both groups prior to birth to investigate and measure the level of the protein Irisin in their blood serum using ELIZA technique (A Kombiotic Co, USA). Through the study, patients were also monitored in terms of the consequences of early birth in terms of complications as well as birth weight. The study showed no significant difference between preterm group (Cases) and term group regarding maternal age (P. value >0.05). The study also showed that the rate of regular contractions was 40% in patients group compared while no one of the control group was with regular contractions (P<0.01). The study demonstrated that the lowest mean of cervical length and birth weight were found in group with preterm labor as compared with the control group. The study revealed that the mean of irisin was reduced significantly in women with preterm delivery (40.19±7.91pg/ml) as compared with the control group (44.16±8.22 pg/ml) at P. value <0.05. In this study, 40 of 100 of study cases delivered preterm (< 34 weeks). The study found positive correlation of serum Irisin with birth weight, birth head during 1st and 5th weeks of delivery (p< 0.01).

Conclusion: Serum level of irisin decreased significantly women with preterm labor as compared with term ones.

Keyword: Irisin; Preterm labour; Term Labour

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Introduction

Studies demonstrated that low birth weight preterm newborn children are bound to have metabolic disorder sometime down the road. Untimely newborn children of comparable lifetime are lighter and shorter and have a higher level of absolute fat mass and sans fat mass (1). Maternal metabolic modifications can prompt confusions, for example, macrosomia in babies, and ongoing reports have indicated that infant irisin levels corresponded with birth weight. Also, lower irisin levels have been found in string blood tests from infants with intrauterine development.
limitation, which may bring about less carmelizing of fat tissue in these children. In this manner, irisin may assume a significant job in the guideline of maternal–fetal glucose homeostasis (2). Irisin was recognized in 2012 as an activity instigated myokine, which drives the transformation of white fat tissue (WAT) into dark colored fat tissue (BAT).

After one year, Roca-Rivada et al. discovered that irisin additionally goes about as an adipokine, since it is discharged particularly by subcutaneous fat tissue (3). As irisin was recommended to improve corpulence and insulin opposition, its helpful potential in metabolic illness treatment has pulled in broad interest(4). Moreover, irisin was examined in relationship with numerous pregnancy difficulties. Since irisin was additionally proposed to improve glucose resistance, its inclusion in gestational diabetes mellitus (GDM) was at first analyzed (5). The aim of the study was to evaluate the role of maternal irisin levels with preterm and term delivery.

Material and method

In this study conducted in Baghdad for the period from February 2017 to the end of December 2017, which included 100 pregnant women who had regular contractions and / or short cervical cervices between 24 to 32 weeks of pregnancy and 100 healthy controls who did not suffer from complications Pregnancy and they were delivered on time. For the purpose of comparing the two groups with respect to the level of Irisin. The study included collecting blood samples from both groups prior to birth to investigate and measure the level of the protein Irisin in their blood serum using ELIZA technique (Kombiotic Co, USA). Through the study, patients were also monitored in terms of the consequences of early birth in terms of complications as well as birth weight.

Statistical analysis

Computerized statistically analysis was performed using Mintab ver 18.0 statistic program for determination of the $P$ value ($P<0.05$: significant).

Findings

The study showed no significant difference between preterm group (Cases) and term group regarding maternal age ($P.$ value $>0.05$). The study also showed that the rate of regular contractions was 40% in patients group compared while no one of the control group was with regular contractions ($P<0.01$). The study demonstrated that the lowest mean of cervical length and birth Wight were found in group with preterm labor as compared with the control group (Table 1).
Table 1: General characteristics of the studied groups

<table>
<thead>
<tr>
<th>Variables</th>
<th>Preterm Labor (n:100)</th>
<th>Control group (n:100)</th>
<th>P. value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong> (Mean±SD)</td>
<td>33.5±3.9</td>
<td>32.5±3.8</td>
<td>NS</td>
</tr>
<tr>
<td><strong>Regular contractions</strong></td>
<td>40 of 100</td>
<td>0 of 50</td>
<td>0.001</td>
</tr>
<tr>
<td><strong>Cervical length</strong> (mm, median (minmax))</td>
<td>21 (5 - 47)</td>
<td>37 (26 - 52)</td>
<td>0.001</td>
</tr>
<tr>
<td><strong>Birth weight</strong> (gm) (mean (range))</td>
<td>2659 (1862-3200)</td>
<td>3381 (3180-3535)</td>
<td>0.001</td>
</tr>
</tbody>
</table>

The study revealed that the mean of irisin was reduced significantly in women with preterm delivery (40.19±7.91pg/ml) as compared with the control group (44.16±8.22 pg/ml) at P. value <0.05 Table 2.

Table 2: Relation of mannose binding lectin with preterm delivery

<table>
<thead>
<tr>
<th>MBL level</th>
<th>Preterm delivery group</th>
<th>Control group</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean</strong></td>
<td>40.19</td>
<td>44.16</td>
</tr>
<tr>
<td><strong>SD</strong></td>
<td>7.91</td>
<td>8.22</td>
</tr>
<tr>
<td><strong>No.</strong></td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

P. value: 0.041

In this study, 40 of 100 of study cases delivered preterm (< 34 weeks). In this subgroup, 12 mothers had histologically proven evidence of chorioamnionitis, and 10 of these patients additionally tested positive for funisitis. It is interesting to note that the levels of irisin in these 5 patients who tested positive for both Chorioamnionitis and funisitis were significantly reduced; (Table 3).
Table 3: Irisin serum levels and pregnancy outcomes

<table>
<thead>
<tr>
<th>MBL level</th>
<th>Benign outcomes</th>
<th>Chorioamnionitis and funisitis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>33.16</td>
<td>28.18</td>
</tr>
<tr>
<td>SD</td>
<td>5.22</td>
<td>6.16</td>
</tr>
</tbody>
</table>

P. value: 0.001

The study found positive correlation of serum Irisin with birth weight, birth head during 1st and 5th weeks of delivery (p< 0.01), Table 4.

Table 4: Correlation of irisin serum levels with gestational age

<table>
<thead>
<tr>
<th>Variable</th>
<th>by Variable</th>
<th>Spearman ρ</th>
<th>P. value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serum irisin levels during 1st week</td>
<td>Birth weight (g)</td>
<td>0.41</td>
<td>0.001</td>
</tr>
<tr>
<td>Serum irisin levels during 5th week</td>
<td>Serum irisin levels during 1st week</td>
<td>0.52</td>
<td>0.003</td>
</tr>
<tr>
<td>Serum irisin levels during 5th week</td>
<td>Weight at 4th week (g)</td>
<td>0.33</td>
<td>0.005</td>
</tr>
</tbody>
</table>

Discussion

The study showed no significant difference between preterm group (Cases) and term group regarding maternal age (P. value >0.05). The study also showed that the rate of regular contractions was 40% in patients group compared while no one of the control group was with regular contractions (P<0.01). The study demonstrated that the lowest mean of cervical length and birth weight were found in group with preterm labor as compared with the control group. The study showed minor differences between the two groups in relation to the irisin protein, as it was relatively low in patients with early birth. Other studies also found that the levels of the iris of the eye are positively related to the child's weight, height, and head circumference in the delivery period, and also found that there was a correlation with the child's weight and head circumference after a month of birth. It was concluded in other studies that the high level of acres was positively correlated with the weight of fetuses before birth (6-8). Moreover, the level of the iris in the blood correlates positively with the total weight of the fetus and its circular circumference as concluded by ultrasound (7). The results of our study are very similar to the results mentioned in the above-mentioned masses and his support for him, as it concerns the Moawad in the first month of their birth. Where previous studies confirmed that newborns represent low levels of serum ezine levels compared to infants during the first month of life (9), there is a significant difference between the first and second evaluation. Other studies conducted in different regions of the world indicate that the level of the iris of the eye was somewhat low compared to the control group in this research, previous studies on mature children showed that the levels of iris of the eye are generally higher compared to the
results in our study (10). We assume that we have detected low levels of the iris as our blood samples are collected directly from children, unlike previous studies in which bloodstream analyzes of the iris were likely to be affected by the maternal iris. In our study of serum iris levels during the fifth week of life were positively associated with the degree of birth weight, the score increased in 5 weeks, the head circumference Z score in 5 weeks unlike some previous studies (11). Many researchers believe that

Irisin in serum levels in new children may be inherited (from parents) (12-14). According to earlier studies conducted earlier, the rates and concentrations of serum protein iris in new children, especially in the first month of their life, may be inherited from the mother through energy-regulating genes and in particular, the lipid protein linked to high-density cholesterol (15-18). Although this protein has not been taken as a differentiating factor in these radomas, which may be a hindrance to this research. However, we found that iris levels were positively related to the child's weight, height, and head circumference in the delivery period. Park et al. found in recent study that newborn mother in preterm labour have reduced irisin level especailly who have signifcant child outcomes like chorioamninitis and fusinistis (19).

**Conclusion:** Serum level of irisin decreased significantly women with pretem labour as compared with term ones

**Conflict of interest:** None

**Source of findings:** self-funding.

**Ethical clearance:** This research was carried out with the patient's verbal and analytical approval before the sample was taken.

**References.**


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