Insulin Sensitivity in Girls with Central Precocious Puberty at Diagnosis and at 6 Months of GnRH analogue Treatment

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BACKGROUND

- Puberty is associated with a physiological decline in insulin sensitivity. Overweight and obesity are common among girls with Central Precocious Puberty (CPP). CPP and early menarche have been considered as risk factors for obesity and cardiovascular diseases during adulthood. A recent study indicated that the effect of early menarcheal age on adult cardiovascular risk may be ascribed to high childhood adiposity. Besides, concern has been raised by the potential impact of GnRH analogues (GnRH-a) treatment on body weight and metabolic profile.

OBJECTIVE

- To evaluate BMI and metabolic parameters in CPP girls at diagnosis and during GnRH-a treatment.

PATIENTS AND METHODS

A prospective longitudinal single cohort study
15 CPP girls evaluated at diagnosis and at 6 months on GnRHa therapy by Oral glucose tolerance test (OGTT)

Inclusion criteria:
- Onset of breast development before 8 years of chronological age (CA),
- Height velocity above the 97th centile for age
- Bone age (BA) advancement by at least one year over CA,
- Pubertal LH response to GnRH (≥ 6 µIU/ml),
- Uterine length ≥ 35 mm.

Exclusion criteria:
- Organic Central Precocious Puberty,
- Congenital Adrenal Hyperplasia
- Any other underlying condition or medication that might affect body weight or metabolic profile.

Glucose and insulin levels were measured at 0, 30, 60, 90 and 120 minutes.

Surrogates indices for fasting (SFI) Insulin resistance (IR) [HOMA-IR, G/I, QUICKI] (were evaluated according to own local cutoffs) 1)

Matsuda Index.

Fasting lipid profile [was evaluated according to A.A.P recommendations] 1)

RESULTS

CONCLUSIONS

Our cohort of CPP girls showed a high frequency of OW and OB as well as high prevalence of IR. BMI and metabolic profile did not show changes at six month of GnRHa treatment. Further studies will be necessary to determine long term metabolic risk in these patients.

Figure 1: Evolution of BMI, SFI and Matsuda Index between diagnosis and 6 months of treatment

Table 1: BMI and metabolic profile at diagnosis and at 6 months of GnRHa Treatment

<table>
<thead>
<tr>
<th>n=15</th>
<th>At diagnosis</th>
<th>6 months</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI SSO</td>
<td>1.12 ± 0.29</td>
<td>1.34 ± 0.28</td>
<td>ns</td>
</tr>
<tr>
<td>HOMA</td>
<td>2.65 ± 0.46</td>
<td>2.28 ± 0.25</td>
<td>ns</td>
</tr>
<tr>
<td>QUICKI</td>
<td>0.34 ± 0.00</td>
<td>0.34 ± 0.00</td>
<td>ns</td>
</tr>
<tr>
<td>G/I Index</td>
<td>0.97 ± 0.25</td>
<td>0.94 ± 0.97</td>
<td>ns</td>
</tr>
<tr>
<td>Matsuda Index</td>
<td>4.37 ± 0.58</td>
<td>4.37 ± 0.56</td>
<td>ns</td>
</tr>
<tr>
<td>AUC Glucose</td>
<td>149.39 ± 448</td>
<td>1419 ± 444</td>
<td>ns</td>
</tr>
<tr>
<td>AUC Insulin</td>
<td>8367 ± 1219</td>
<td>8714 ± 1262</td>
<td>ns</td>
</tr>
<tr>
<td>2 Impaired SIF</td>
<td>6/15</td>
<td>4/15</td>
<td>ns</td>
</tr>
<tr>
<td>Impaired Matsuda</td>
<td>3/15</td>
<td>3/15</td>
<td>ns</td>
</tr>
<tr>
<td>Dislipidemia</td>
<td>4/15</td>
<td>2/15</td>
<td>ns</td>
</tr>
</tbody>
</table>

Data are expressed as mean ± SE

SFI cutoff for normal Argentinian girls:
HOMA 1.2 (0.3-2.6), QUICKI 0.36 (0.23-0.47), G/I Index 12 (7.9-44)

REFERENCES


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The authors have nothing to disclose

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