Metabolism and gonadal axis of early menarche girls and girls treated with GnRHa during puberty

Authors: Qiuli Chen, Jun Zhang, Song Guo, Huimei Ma, Hongshan Chen, Yanhong Li, Minlian Du

Hospital: The First Affiliated Hospital of Sun Yet-sen University, Guangzhou, China

OBJECTIVES

Early menarche may be associated with diabetes, metabolic syndrome, cardiovascular disease and oligomenorrhea in adults. While the state of metabolism and gonadal axis of early menarche girls and girls who treated with Gonadotropin-releasing hormone analogs (GnRHa) during puberty was not so clear.

We assessed in a retrospective unicenter study the state of metabolism and gonadal axis of early menarche girls and girls who treated with GnRHa during their puberty.

METHODS

Thirty-nine early menarche girls and 58 girls who had treated with GnRHa were enrolled in our study and 19 normal menarche girls were enrolled as control group.

All of them were two years within puberty. Data were collected in height, weight, gonadal hormone, blood glucose, insulin, blood lipid, leptin, adiponectin and the size of uterus and ovary.

RESULTS

Both BMI SDS for chronological age (CA) and for bone age (BA) of early menarche girls were significantly higher than normal menarche girls (P<0.05). The ratio of insulin resistance in early menarche girls (20.5%) was also significantly higher than normal girls (0%). No significant difference in lipid metabolism and gonadal axis between two groups. In girls treated with GnRHa, BMI SDS, insulin, HOMA-IR and the ratio of insulin resistance (20.7%) were all significantly higher than normal group (P<0.05). Meanwhile, DHEAS, androstenedione and testosterone of GnRHa treated girls were significantly higher than early menarche girls, and DHEAS was higher than normal girls. The size of uterus in treated group was larger than the other two groups.

CONCLUSIONS

Early menarche and GnRHa treatment may take negative effect to BMI and glucose metabolism. Androgen was higher in GnRHa treated group. Therefore, suggestion was that BMI, insulin, blood glucose and androgen should be monitored in early menarche girls and girls treated with GnRHa.

References


Metabolism of 3 groups

<table>
<thead>
<tr>
<th></th>
<th>age</th>
<th>BMI</th>
<th>BMIMDBa</th>
<th>Insulin</th>
<th>FBG</th>
<th>HOMA-IR</th>
<th>HOMA-IR</th>
</tr>
</thead>
<tbody>
<tr>
<td>C group</td>
<td>19</td>
<td>17.0</td>
<td>8.1</td>
<td>1.8</td>
<td>2.0</td>
<td>2.4</td>
<td>2.2</td>
</tr>
<tr>
<td>EM group</td>
<td>19</td>
<td>17.0</td>
<td>8.1</td>
<td>1.8</td>
<td>2.0</td>
<td>2.4</td>
<td>2.2</td>
</tr>
<tr>
<td>GT group</td>
<td>19</td>
<td>17.0</td>
<td>8.1</td>
<td>1.8</td>
<td>2.0</td>
<td>2.4</td>
<td>2.2</td>
</tr>
</tbody>
</table>

C group: control group; EM group: Early menarche group; GT group: GnRHa treatment group.