Body Mass Index is a Negative Predictor of Peak Stimulated Growth Hormone in Han Children with Short Stature

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OBJECTIVES

To assess the effects of body mass index (BMI) on peak growth hormone (GH) values in Han children with short stature.

METHODS

This was a retrospective, cross-sectional study. We used arginine-clonidine test to analyze the GH–insulin-like growth factor 1 (IGF1) axis in 657 Han children aged 2 to 16 years with short stature.

<table>
<thead>
<tr>
<th>parameter</th>
<th>B</th>
<th>Standard coefficient</th>
<th>P</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI SDS</td>
<td>-0.210</td>
<td>-0.298</td>
<td>0.000</td>
<td>0.08</td>
</tr>
<tr>
<td>TC</td>
<td>-0.099</td>
<td>-0.108</td>
<td>0.004</td>
<td>0.017</td>
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</tbody>
</table>

RESULTS

BMI standard deviation score (SDS) and total cholesterol (TC) were the only significant and negative predictors of peak GH (stepwise multiple regression; P=0.000; P=0.004). Increased BMI SDS was associated with increased incidences of GHD and CGHD (Chi-square; P=0.000; P=0.000), the incidence of CGHD increased sharply with a BMI SDS >2.

CONCLUSIONS

Our data confirm that BMI has a negative impact on the peak GH response to arginine-clonidine testing, the effect is particularly strong in obese children.

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