Diagnostic accuracy of Tri-Ponderal mass index (kg/m3) for identifying glucose intolerance in obese children and adolescents.

L. ARCINIEGAS1, E. MOGAS1, A. FABREGAS1, R. TOMASINI1, A. CAMPOS1, M. CLEMENTE1 and D. YESTE1
1. Vall d'Hebron Barcelona Hospital Campus

INTRODUCTION

The identification of obese patients with increased susceptibility and risk for glucose intolerance and type 2 diabetes requires an oral glucose tolerance test (OGTT).

Reference values for Body mass index (BMI) and Tri-Ponderal mass index (TMI) according to age and sex of healthy children in Spain without malnutrition or obesity have recently been published(*)

TMI values remain very uniform in both boys and girls from the age of 8 to 18 years, therefore a single cut-off point is optimal to identify overweight (TMI > 13.8 and ≤ 15.2) and obesity (TMI ≥ 15.3).

RESULTS

The prevalence of glucose intolerance and type 2 diabetes in this cohort is 9% (10 males and 12 females) and 0% respectively, with no differences observed in relation to sex and age.

<table>
<thead>
<tr>
<th></th>
<th>ROC Area</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>Correctly classified</th>
<th>Cut-off point (Youden)</th>
<th>Best Cut-off point (AUC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI</td>
<td>0.630</td>
<td>59.9</td>
<td>70.5</td>
<td>69.4</td>
<td>32.6</td>
<td>32.6</td>
</tr>
<tr>
<td>zsBMI</td>
<td>0.612</td>
<td>59.0</td>
<td>66.3</td>
<td>65.6</td>
<td>5.8</td>
<td>+ 5.8</td>
</tr>
<tr>
<td>TMI</td>
<td>0.582</td>
<td>31.8</td>
<td>88.4</td>
<td>83.2</td>
<td>23.1</td>
<td>21.5</td>
</tr>
<tr>
<td>ICT</td>
<td>0.557</td>
<td>40.0</td>
<td>80.1</td>
<td>76.5</td>
<td>0.66</td>
<td>0.63</td>
</tr>
</tbody>
</table>

METHOD

Cross-sectional study of 239 obese patients (125 males) aged 8 to 18 years (12.5 ± 2.3). 45.9% of which have grade 3 obesity.

ROC curves were used to find the best cut-off point for: TMI (kg/m3), BMI (kg/m2), BMI z-score value (zsBMI) and waist-to-height ratio (WHtR) to identify patients with glucose intolerance or type 2 diabetes according to American Diabetes Association criteria.

CONCLUSIONS

The diagnostic accuracy of IMT for identifying obese children and adolescents aged 8 to 18 years with impaired glucose tolerance is superior to the other anthropometric parameters evaluated and allows correct classification of 83.2% of patients.

Obese patients with IMT >21.5 should be considered for OGTT.

REFERENCES


CONTACT INFORMATION

dyeste@vhebron.net
dlr.larrya@hotmail.com