

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

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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.

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

AIM

To determine the prevalence of glucose intolerance and type 2 diabetes in a cohort of obese children and adolescents and to establish the predictive value of the Tri-Ponderal mass index (TMI) and other anthropometric parameters to identify these comorbidities.

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

(*Carrascosa A. Yeste D et al. Body mass index and tri-ponderal mass index of 1,453 healthy non-obese, non-undernourished millennial children. The Barcelona longitudinal growth study. An Pediatr (Bar)., 89 (2018), pp. 137-143

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