Comparison between CDC (Centers for Disease Control and Prevention) and Italian growth charts in the characterization of pediatric obesity
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Background

The use of international or local growth charts for the definition of pediatric obesity is still debated. Inappropriate reference standards may lead to under/over-estimation of the prevalence and consequently of the number of patients to be included in diagnostic work-up.

Objective

To define the differences between patients considered obese according to either CDC or Italian growth charts.

Methods

A single-centre cohort of 177 children was studied: all children (59 males; mean age 12.85 ± 1.94 years) underwent clinical and anthropometric assessment by the same pediatric endocrinologist.

BMI SDS were calculated by both CDC and local growth standards. Obese (>95th percentile) and overweight (>85th percentile) patients, according to local BMI SDS, underwent oral glucose tolerance test (OGTT), blood tests for metabolic and endocrine evaluation, and DEXA scan to define body composition.

Results

According to the CDC growth charts, 84 out of 117 patients (71.8%) were considered obese (BMI ≥ 2 SDS); this percentage decreased to 62.4% (73/117 patients) when national BMI SDS were used.

No significant differences in the distribution of patients according to sex (males: 58.3% in CDC growth charts vs 52.1% in local growth charts) and puberty (prepubertal: 20.2% vs 16.4%) were found (Fig. 1).

The comparison between patients considered obese only for CDC growth charts and patients considered obese for both growth charts (Tab. 1) showed that the first were younger (p<0.001) and had lower abdominal (p<0.001), waist (p<0.001) and wrist circumference (p=0.002), abdominal circumference/height ratio (p<0.001) and triglyceride concentrations (p=0.032), higher HDL cholesterol (p=0.028) and lower percentage of fat mass (p=0.001).

Conclusions

Local growth charts showed lower BMI SDS than CDC growth charts.

The use of CDC growth charts could result in an earlier identification of patients with anthropometric and radiological characteristic of obesity, before biochemical alterations can be detected.