

# SEVERE OBESITY

## MUCH MORE THAN AN UNHEALTHY LIFESTYLE

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### INTRODUCTION

- In Portugal, pediatric obesity is an important public health problem (30.7% children are overweight or obese).
- In 95% of cases, obesity is exogenous (calory intake higher than energy output).
- Genetic etiology should be considered in children with dysmorphic features, global developmental delay, early onset of severe obesity (before 5 years), hyperphagia or family history of severe obesity.
- Regardless of etiology, the cornerstone of obesity treatment is the implementation of a healthy lifestyle.

### CLÍNICAL CASE

♀ 10 y.o. ⇒ Pediatric Endocrinology due to **Obesity** and **High stature**



Late pre-term delivery  
Weight and height AGA  
Normal development  
Atopic history



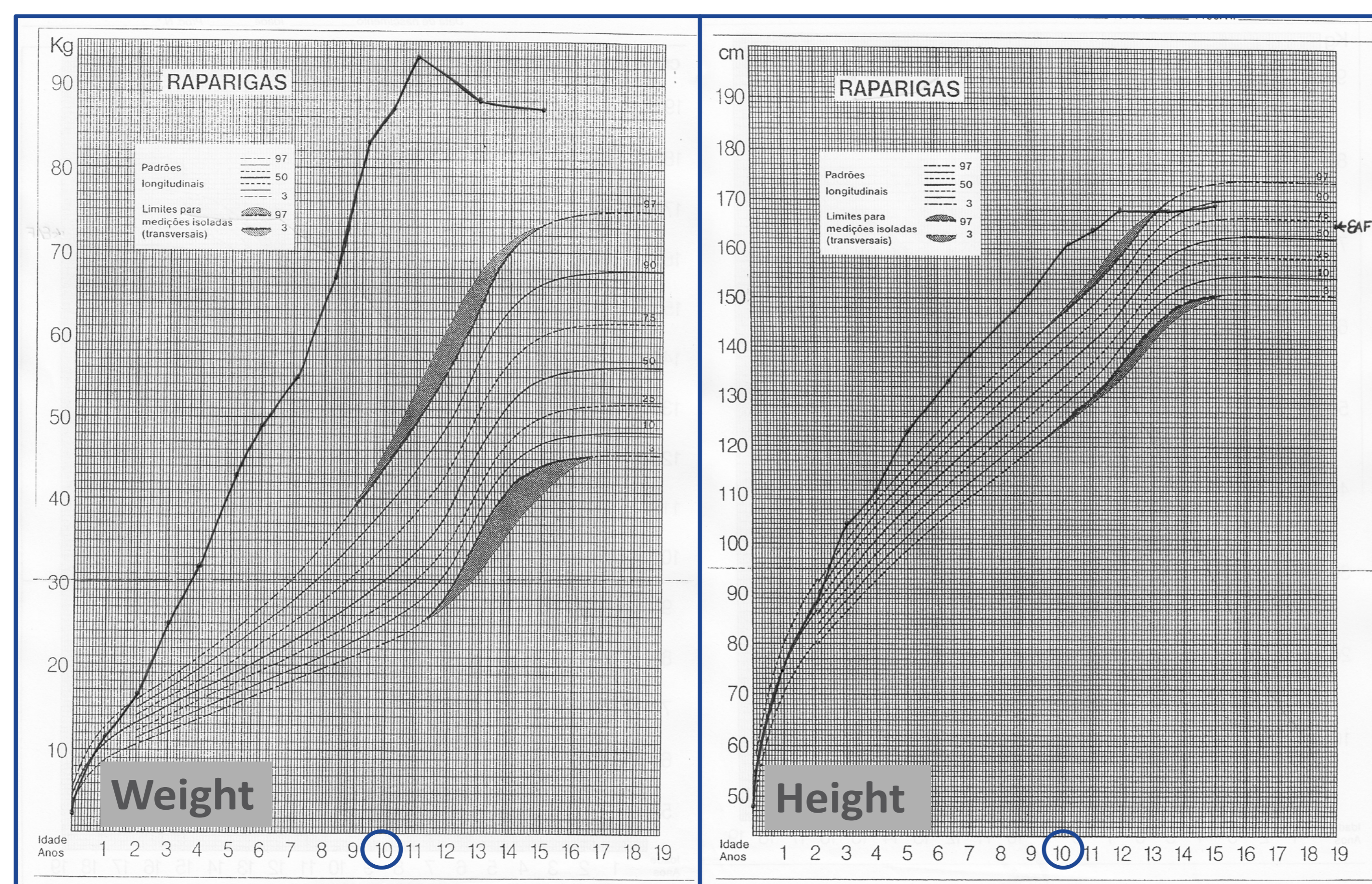
Asymptomatic  
No hyperphagia  
Age of menarche 10.5 y



No history of family obesity  
Mid-parental height = 165.5 cm (z-score + 0.36)



Cushing-like signs  
Tanner M3P4  
Weight z-score +5.26  
Height z-score + 3.35  
BMI z-score +3.95



High IGF-1 levels  
Reduced Leptin levels  
Hyperinsulinism  
Bone age 2.5y advanced

OGTT w/o complete GH suppression

MRI: enlarged adenohypophysis  
(hyperplasia vs adenoma)

Normal IGF-1 levels  
Variable Leptin levels  
Persistent Hyperinsulinism

Matching series of MRI-CE

MC4R gene heterozygous mutation  
GRHL gene heterozygous mutation  
AQP7 gene homozygous mutation

MC4R variant inherited from father  
(not overweight)

### COMMENTS

- The authors present an early-onset severe non-syndromic obesity case with mutations in three distinct genes.
- MC4R gene mutations are the main cause for genetic obesity. GHRL e AQP7 gene mutations have been described as obesity risk factors. However, the detected variants cannot individually explain this child obesity.
- The authors suggest a possible synergistic effect of all three mutations as the underlying cause.
- In children with early onset severe obesity, genetic etiology should always be considered.

