

BONE AGE ASSESMENT AND GLUCOSE METABOLISM IN OVERWEIGHT AND OBESE CHILDREN

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BACKGROUND

Bone age (BA) tends to exceed chronological age (CA) in obese children. There are studies showing that insulin may directly influence skeletal growth.

OBJECTIVE AND HYPOTHESES

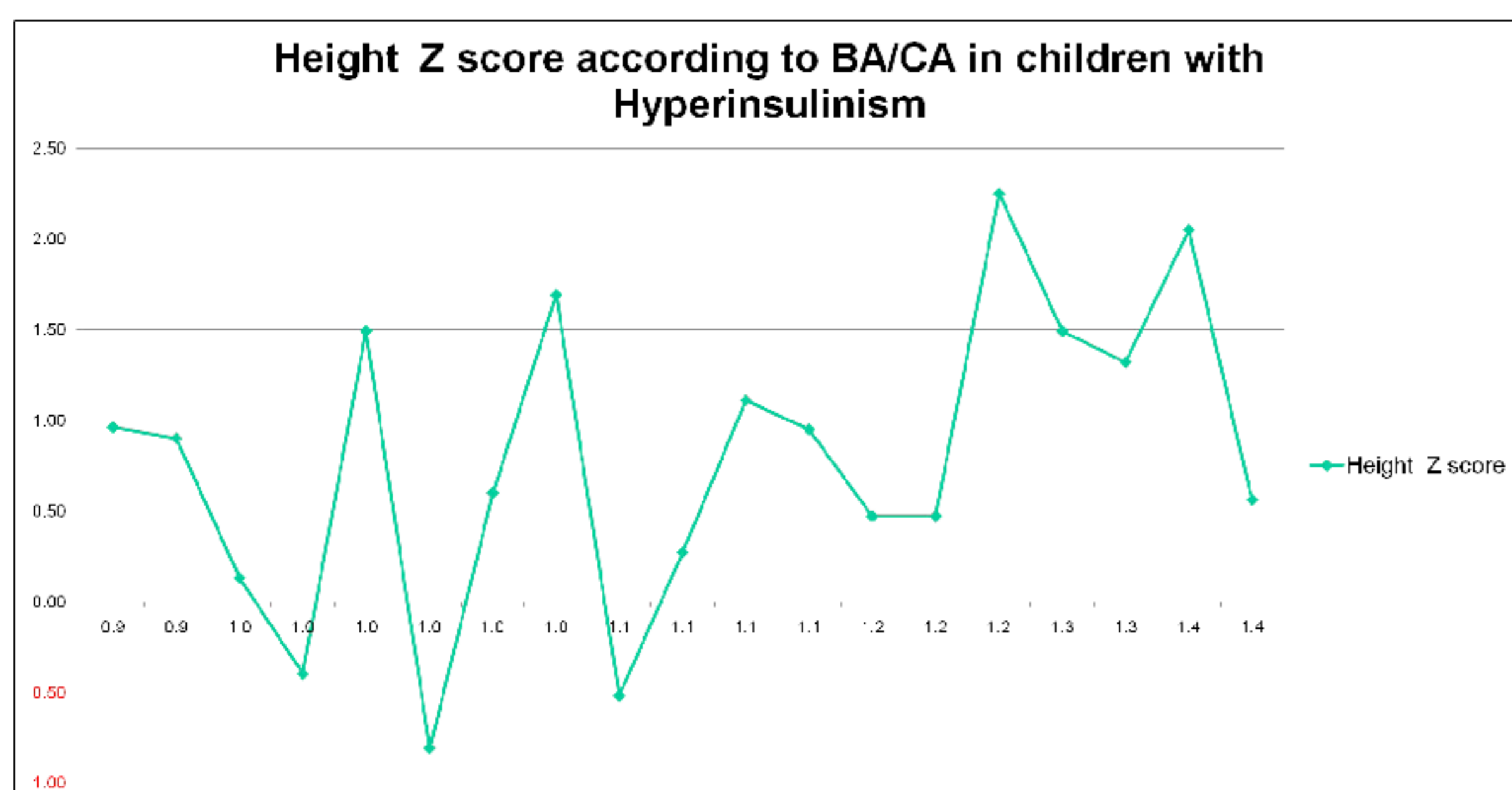
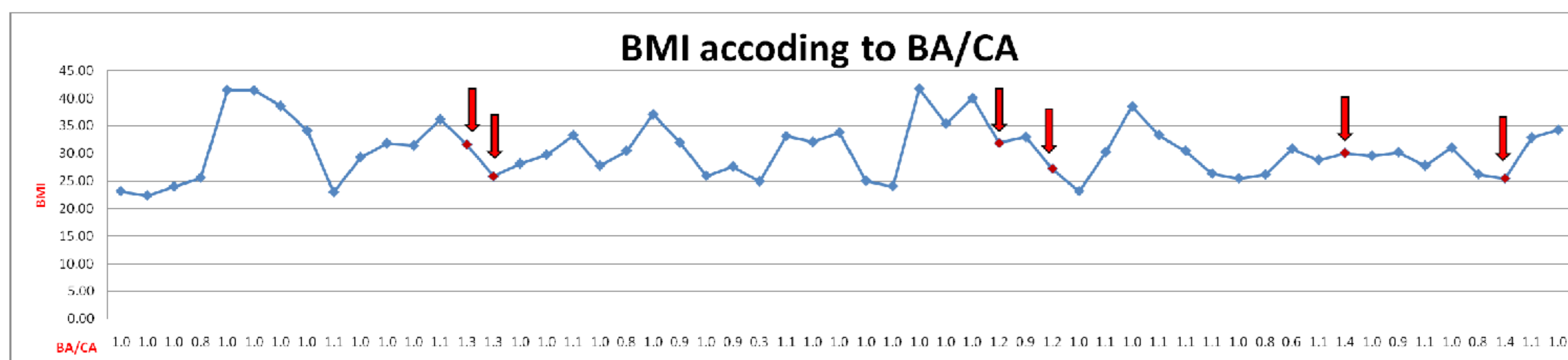
Objective: To determine whether there is an association between bone age and glucose metabolism in a group of overweight and obese children.

METHODS

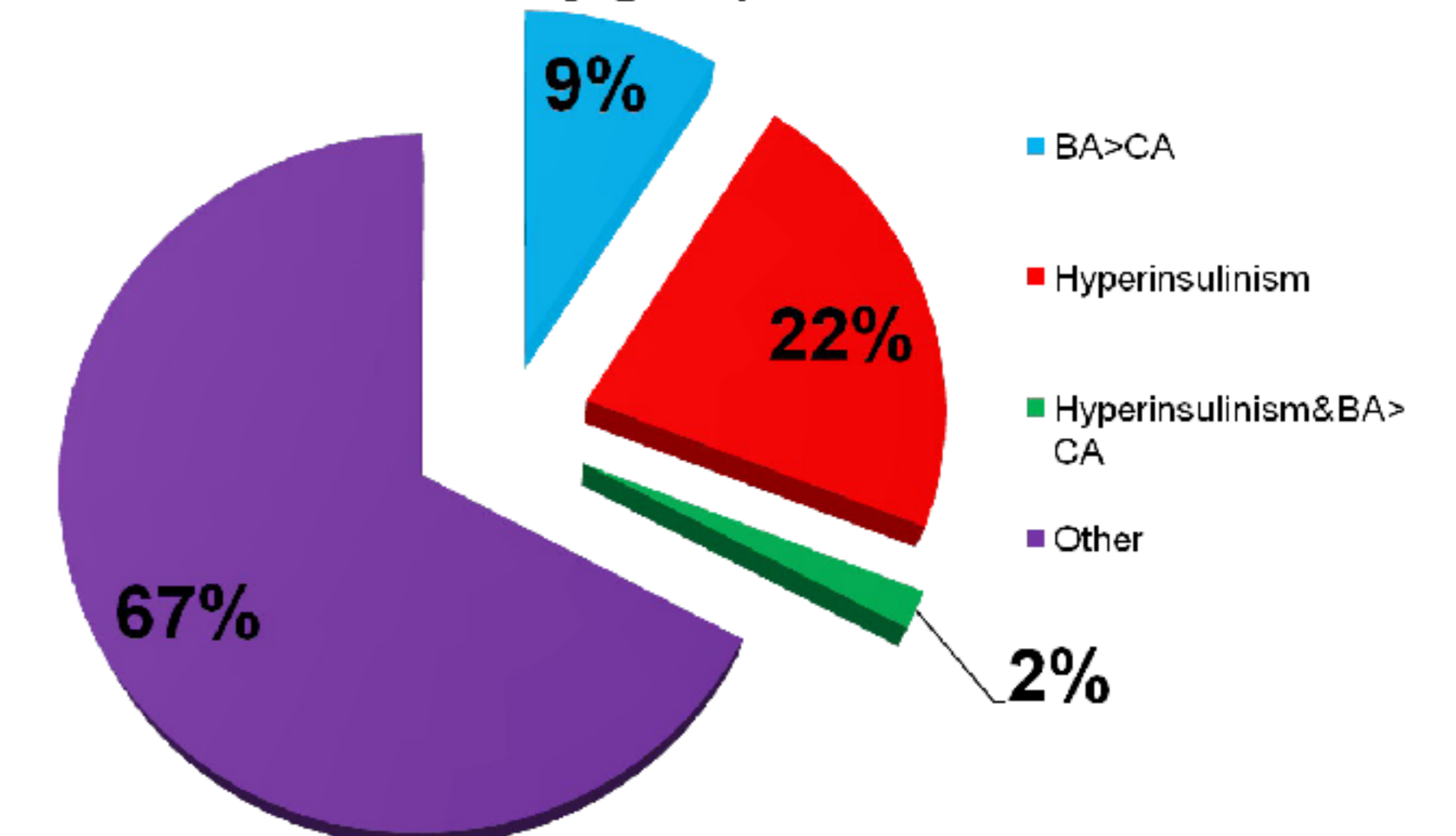
The study included 55 obese or overweight children, mean age: 11.56 ± 3.07 years old. Anthropometric indexes (weight, height, BMI, waist circumference, weight to height ratio), glucose metabolism (fasting insulin, fasting glucose, oral glucose tolerance test, HOMA-IR) were evaluated. Advanced BA maturation was defined as the third percentile with $BA / CA > 1.2$. The data are expressed as: mean \pm standard deviation (SD), minimum and maximum. Statistical data was performed using Excel 2007.

RESULTS

BA was significantly advanced only in 10.90 % (n = 6) of the children in the studied group. All were in the prepubertal stage, with a mean age of 10.53 ± 1.43 years and the male to female ratio was 5:1. Hyperinsulinemia was found in 23.63% (n=13) of children but only one (7.69%) of these, had a significantly advanced BA. Children with advanced BA and hyperinsulinism or alterations of the glucose metabolism had a lower Height Z-score than children with bone advancement in the lower tertiles. It was not possible to make the same observation in the group of children with normal BA ($BA / CA < 1.2$) and alterations of the glucose metabolism or/and hyperinsulinism. The One Way ANOVA analysis (confidence interval 95%) was used for the comparative evaluation of BMI z score, HOMA-IR and BA / CA . No correlation between BMI Z score, HOMA -IR and advanced bone age was found ($p \geq 0.05$).



Hyperinsulinism and Advanced Bone age in the study group



CONCLUSIONS

Hyperinsulinemia and alteration of the glucose metabolism could be associated with advanced bone age in obese children independent of the degree of obesity. Further studies are needed to establish other metabolic factors that are involved in modulating the skeletal growth in obese children.

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