EVALUATION OF BODY COMPOSITION AND RESTING METABOLIC RATE IN CHILDREN WITH GROWTH HORMONE DEFICIENCY

P1-393

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BACKGROUND:

It is known that growth hormone regulated metabolic processes, including lipid metabolism and the amount of adipose tissue. The purpose was to study metabolic rates at rest in untreated children with growth hormone deficiency (GHD) and their relationship with lipid and hormone levels/

OBJECTIVES:

The analysis of the body composition and resting metabolic rate (RMR) among prepubertal children with GHD.

RESULTS:

Among 20 patients with GHD showed increased metabolism. We observed high resting metabolic rate: RMR 1016 kcal [961; 1025], RMR/LM 68.1 kcal/kg [56,6; 75,5], increase coefficient of variation (CV) 23.8% [8.5, 32.4]. Body fat percentage was 19% [15.6; 19,8]. Correlation analysis revealed average positive correlation between the amount of SDS BMI and RMR/LM ($r = 0.54$, $p < 0.05$). The correlation analysis of the RMR/LM did not reveal its connection with blood lipid and IGF-1 levels.

PATIENTS AND METHODS:

The 20 children with GHD (11 boys, 9 girls, Tanner stage 1; aged 5-10 yr, median 6,75 years) were observed before growth hormone treatment.

We investigated the lipid profile, IGF-1 level, evaluated the body composition using the Tanita (Japan) body composition analyzer BC-418MA and determined the RMR using the indirect calorimetry method in all children.

We used the RMR indicator adjusted for the lean mass (LM): RMR/LM and coefficient of variation (CV).

Parameter	Median [low quartile; upper quartile]
Age, yrs	6,75 [6,0; 8,5]
Bone Age, yrs	5.0 [3.0; 6.5]
Height SDS	-2.6 [-3,1; -2.3]
BMI SDS	-0,9 [-1.6; 0.0]
Height Velocity, cm/yr	3,8 [3.0; 4,3]
Height Velocity SDS	-1.8 [-2.5; -1,1]
Peak GH, ng/ml	4,3 [1,9; 6,1]
IGF-1, ng/ml	71 [53; 105]
IGF-1 SDS	-1.3 [-2.1; -0.5]
Cholesterol, mmol/L	4.9 [4,3; 5.9]

METABOLIC PARAMETERS

Parameter	Median [low quartile; upper quartile]
RMR, kcal/day	1016 [961; 1025]
Coefficient Variation, %	**23.8 [8.5; 32.4]**
RMR/LM, kcal/kg	68.1 [56.6; 75.5]
Body fat, %	19.05 [15.60; 19.80]
LM_{body}/LM_{limb}	2.15 [1.80; 2.76]
Respiratory Coefficient	0.89 [0.84; 1.02]

CONCLUSIONS:

Prepubertal patients with growth hormone deficiency in our study revealed increased resting metabolic rate, may be associated with low lean mass. No correlation between the metabolic rate, lipid level and IGF-1 were observed.

Authors have nothing to disclose