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## **The results of treatment with growth hormone for short stature children born small for gestational age (SGA or IUGR)**

### **Abstract**

In Poland, children born small for gestational age have been treated with growth hormone since 2015. It was an opportunity to start research on this group of Polish children. Children with SGA have a higher risk of complications from hypotrophy, including short stature. The short stature in children with SGA is an indication for rhGH treatment. Growth hormone treatment normalizes the final body height and has a positive effect on the lipid metabolism. However, there are few items that describe the anthropometry of children with SGA more precisely.

The aim of the research was to evaluate the effects of rhGH treatment in children with SGA in the first year of therapy. The influence of various parameters on the growth velocity (HV) was analyzed. Body composition of short stature children with SGA and its changes during rhGH treatment were assessed.

The study group included 41 SGA patients with short stature, who were treated with rhGH at the Department of Pediatrics and Endocrinology of the Medical University of Warsaw. The control group, that included children with growth hormone deficiency (GHD), was also treated with rhGH in the same clinic. Patients in both groups were measured before, during and after 1 year of treatment. All obligatory tests were also performed. The SGA group was analyzed in comparison to the group of children with GHD and to population norms.

Children with SGA had lower body weight and BMI and smaller head circumference in relation to the population norms. In the first year of treatment, rhGH grew on average 2.90 cm / year faster than before treatment and in 71% they achieved a good growth effect. They grew statistically significantly slower than children with GHD. Better HV was influenced by higher HV before treatment and higher % FAT. Children with higher levels of triglycerides and cholesterol before treatment grew slower. Treatment with rhGH did not significantly impact on other body composition parameters in children with SGA, except for a significant decrease in

% FAT. During the first year of treatment, parameters like HOMA-IR, QUICKI and fasting glucose increased significantly in children with SGA.

The rhGH treatment in short stature, SGA children gives a good growth effect already in the first year of treatment. The only significant change in body morphology is a decrease in % FAT. There was no improvement in body weight or head circumference. The constant monitoring of carbohydrate metabolism parameters is necessary, and perhaps the inclusion of regular evaluation of children with SGA by a clinical dietitian.