GROWTH RESTRICTION AT BIRTH HAS A DELETERIOUS IMPACT ON GROWTH OUTCOME IN CHILDREN AFTER KIDNEY TRANSPLANTATION

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Introduction and Aims: Catch-up growth after kidney transplantation (KTx) is far from regular. Whether being born small for gestational age (SGA) affects post-transplant growth is unclear.

Methods: Linear growth, i.e. height, sitting height, and leg length, was prospectively investigated during 1473 annual visits in a cohort of 316 pediatric KTx recipients with a mean follow-up of 4.7 years. Predictors of growth outcome in KTx patients with (n=94) and without (n=222) SGA history were assessed by use of linear mixed-effects models.

Results: Mean SD scores for all linear body dimensions were significantly lower in SGA compared to non-SGA patients (Δheight, 0.72; Δsitting height, 0.62; Δleg length, 0.64; each p<0.001). This was true for all age groups despite a more frequent use of growth hormone (GH) treatment (SGA, 61.7%; non-SGA, 43.9%; p<0.05). Mean sitting height index (i.e. ratio between sitting height and stature) was elevated compared to controls, more exposed in SGA (1.1) than non-SGA (0.9) patients reflecting body disproportion. Generally SGA non-SGA differences in the degree of body disproportion are related to late prepubertal age. Although, substantial catch-up growth and improvement of body disproportion was observed from early childhood onwards, onset of pubertal growth spurt was delayed by 1.5 years and adult height was lower in SGA (-2.0) compared to non-SGA (-1.1; p<0.001) patients. In both patient groups, parental height and bone age delay were revealed as significant predictors of linear body segments. In non-SGA patients homogeneous effects of serial clinical parameters (e.g. steroid dosage, plasma HCO3 primary renal disease) on growth outcome were observed. In contrast, the impact of clinical predictors differed widely in SGA patients.

Conclusions: Growth outcome after KTx is diminished in children born SGA despite a more frequent use of GH therapy in the pretransplant period.