Glomerular filtration rate following GH treatment in SGA born young adults

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GFR decreased only during 6 months after GH cessation, but thereafter GFR remained stable and within the normal range. GFR at 21 years is similar in GH-treated and untreated young adults born SGA and AGA.

Background

- **GH treatment** increases glomerular filtration rate (GFR), as serum IGF-I stimulates the renin-angiotensin system.
- Infants born with a **low birth weight** have a smaller number of nephrons, which causes a lower GFR, a higher blood pressure and a higher albumin-to-creatinine ratio in early adulthood.

Objective

1. To investigate **longitudinal changes in GFR** following growth hormone (GH) stop in young adults born small for gestational age (SGA).
2. To compare **GFR at 5 years after cessation** with untreated young adults born SGA or AGA, at the age of 21 yrs.

Methods

1. GFR was calculated with the CKD-EPI formula in 261 **GH-treated** young adults born SGA (SGA-GH), at GH-stop and at 6 months, 2 and 5 yrs thereafter.
2. At 5 yrs after stop, a mean age of 20.9 yrs, GFR in 261 SGA-GH young adults was compared with:
   - SGA born young adults with age-matched controls with:
     - Persistent short stature (SGA-S, n=56)
     - Spontaneous catch-up growth (SGA-CU, n=118)
   - AGA born young adults with normal adult height. (AGA, n=135)

Results

1. GFR decreased significantly during the first 6 months after cessation of **GH treatment**, while remaining well within the normal range (124.6 vs. 120.2mL/min/1.73m², p<0.001), between 2- and 5 yrs.
2. At 5 yrs after GH-stop, SGA-GH adults had a similar **GFR** as the untreated SGA and AGA adults.

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Figure 1. Longitudinal follow-up of GFR in GH-treated young adults and comparison at 21 years of age to untreated young adults born SGA and AGA.