STUDY OF IGF-1 RECEPTOR (IGF1R) GENE IN SMALL FOR GESTATIONAL AGE (SGA) PATIENTS WITH SHORT STATURE TREATED WITH rhGH.

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BACKGROUND
IGF1 is essential for pre and postnatal growth. Mutations in IGF1 R gene have been described in patients with intrauterine growth retardation and other anomalies.

OBJECTIVE
To study IGFIR gene in SGA patients treated with rhGH and correlate the results with clinical presentation and response to rhGH treatment.

METHODS
- Longitudinal retrospective study of 69 SGA patients with short stature registering weight, height, adult height, target height, height at start of rhGH and height gain after treatment.
- Genetic analysis consisted in DNA amplification, sequencing and electrophoresis.
- Statistics SPSS V20.0 (p<0.05)

RESULTS:
- From the total cohort (79.7% female), 10.1% showed mutations in IGF1R, 81.4% polymorphisms and 13% were normal. Most prevalent polymorphisms were E1013E and IVS(+72) A/G.
- Patients with mutations were significantly smaller at birth (lower weight, length and cephalic circumference), and presented with maternal short stature.
- Patients with polymorphisms showed lower length and weight at birth, target height and adult height compared with those with normal IGFIR analysis (ns).
- Analyzing response to rhGH in patients with the most prevalent polymorphisms, those with IVS(+72)A/G initiated before rhGH (6.4±2.6 vs 8.9±2.9 years; p=0.03), with more affected height (-3.3±0.6 vs -2.5±0.6 SDS; p=0.04), lower levels of IGF1(117±71 vs 264±130 mg/d; p=0.03) and showed a better response in the first year of treatment (Δ0.9±0.8 vs Δ0.3±0.3 SDS; p=0.01) than patients with E1013E.

CONCLUSIONS:
- IGF-1 R gene mutations cause severe prenatal growth failure and are usually associated with familial short stature.
- Polymorphisms in this gene (E1013E and IVS(+72)A/G) have been found in SGA patients with short stature.
- The presence of different polymorphisms can influence the response to rhGH treatment in these patients.