# Comparison of efficacy of recombinant human growth hormone in treating idiopathic short stature and growth hormone deficiency in children

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## OBJECTIVES

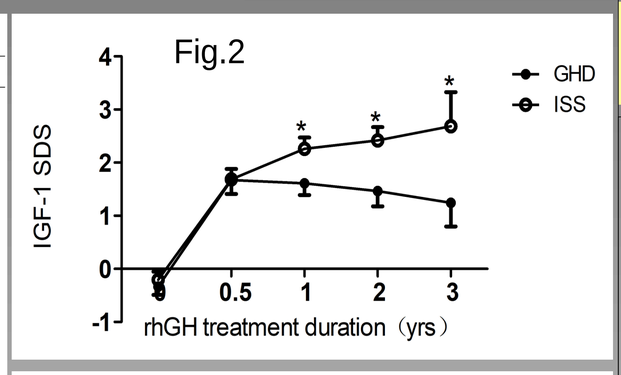
The present study aimed to compare the efficacy and safety of recombinant human growth hormone (rhGH) therapy between idiopathic short stature (ISS) and growth hormone deficiency (GHD).

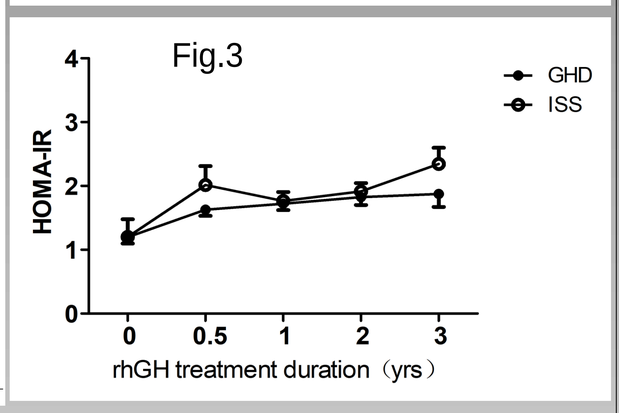
## METHODS

A total of 150 ISS and 153GHD children, who received rhGH treatment for more than one year, were enrolled into the study. The clinical data of these children from 2005 to 2016 was retrospectively analyzed. Growth velocity (GV), height standard deviation (HtSD), IGF-1 standard deviation (IGF-1SD), body mass index (BMI) and the incidence of fasting hyperglycemia, fasting hyperinsulinemia and hypothyroidism were recorded and compared.

**Table 1 The comparison between GHD and ISS of treatment baseline indicators**

| | GHD | ISS | $T/X^2$ | P |
|---|---|---|---|---|
| Start treatment cases | 153 | 150 | | |
| Sex ratio（Male/Female） | 95/58 | 87/63 | 0.53 | 0.47 |
| Age at the beginning of treatment | 9.51±0.21 | 8.97±0.24 | 1.73 | 0.08 |
| Bone age at the beginning of treatment | 7.63±0.26 | 7.47±0.26 | 0.43 | 0.67 |
| Ht（cm）at the beginning of treatment | 123.5±1.16 | 121.5±1.27 | 1.14 | 0.26 |
| Ht SDS at the beginning of treatment | -2.46±0.11 | -2.26±0.08 | 1.47 | 0.14 |
| IGF-1 SDS | -0.34±0.16 | -0.21±0.15 | 0.61 | 0.54 |
| rhGH dosage (mg/kg · week) | 0.28±0.04 | 0.38±0.11 | 10.74 | 0.00 |
| Fasting blood glucose at the beginning of treatment（mmol/L） | 4.64±0.05 | 4.52±0.06 | 1.64 | 0.10 |
| fasting insulinat the beginning of treatment（u/L） | 5.71±0.51 | 5.84±1.23 | 0.10 | 0.92 |
| BMI at the beginning of treatment | 16.34±0.18 | 15.96±0.16 | 1.59 | 0.11 |
| MPH（cm） | 163.87±0.56 | 162.2±0.56 | 1.91 | 0.06 |



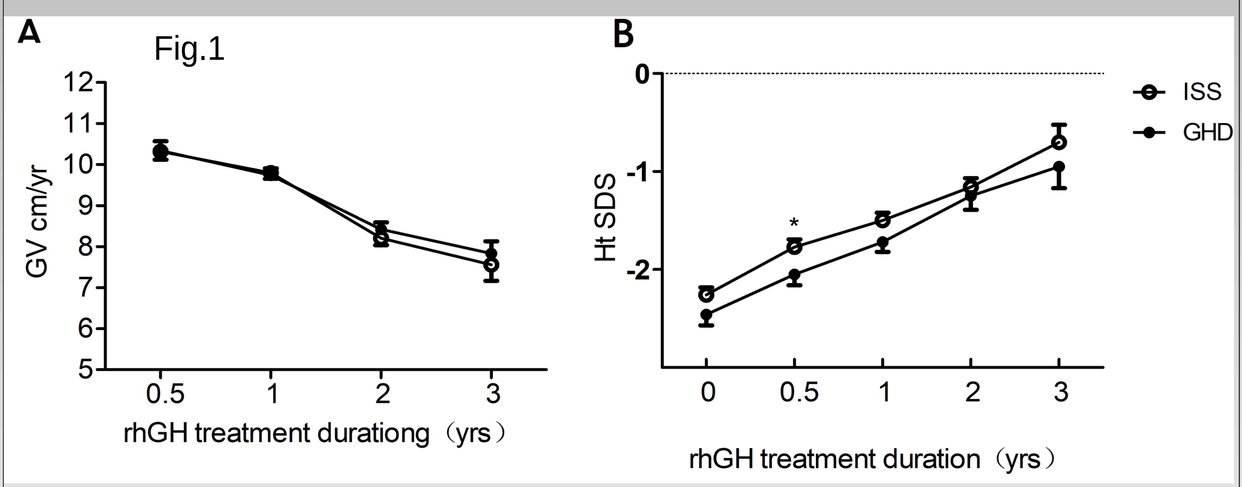




Table 2 **Comparison of the side effects of rhGH therapy at the first year of treatment**

| | GHD | N | ISS | N | $X^2$ | P |
|---|---|---|---|---|---|---|
| Fasting hyperglycemia | 15（9.8%） | 153 | 19（12.7%） | 150 | 0.62 | 0.43 |
| Fasting hyperinsulinemia | 7（4.6%） | 153 | 16（10.7%） | 150 | 4.0 | 0.04 * |
| hypothyroidism | 17（11.1%） | 153 | 7（4.7%） | 150 | 4.3 | 0.04 * |

## RESULTS

1. Differences in the age of beginning treatment, bone age, height and BMI between these two groups of children was not statistically significant.

2. GV was higher in the GHD group than in the ISS group, but the difference was not statistically significant ($P$>0.05). HtSD was significantly lower in the GHD group at the beginning of treatment and at half a year of treatment, when compared with the ISS group ($P$<0.05).

3. The incidence of hypothyroidism was significantly higher in the GHD group than in the ISS group (13.72% *vs.* 6.0%, $P$<0.05).

4. The incidence of hyperinsulinemia was significantly higher in the ISS group than in the GHD group (15.33% *vs.* 7.84%, $P$<0.05).

## CONCLUSIONS

The rhGH has similar effects on the growth of children with ISS and GHD. Children with ISS are more likely to suffer from fasting hyperinsulinemia, while children with GHD are more likely to have hypothyroidism.

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