Immunogenicity of recombinant growth hormone and relationship its growth-promoting effect in the children with short stature

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INTRODUCTION
Although there are many well-known components that affect the growth response to recombinant growth hormone (rGH), its effect on total height gain is still not fully predictable. Current knowledge on the relationship between growth response to rGH and its immunogenicity is limited.

AIM
The aim of the study was to reveal its relationship with the antibody formation against rGH and growth-promoting effect.

METHOD
Study involving 193 children treated with rGH therapy,
- 111 of whom diagnosed with growth hormone deficiency (GHD),
- 37 idiopathic short stature (ISS), and
- 45 short stature due to non-endocrine disorders.

The number of the participants according to treatment years was as follows:
34, 34, 48, 30, 22, 29 children; at onset, first, second, third, 4th, and 5th years on treatment.

GHD antibody (GH-Ab) and total IgE assays were studied from 193 and 97 participants, respectively.

The presence of GH-Ab and their association with growth response to rGH were evaluated in three groups.

RESULTS
• Seropositivities for GH-Ab and total IgE were detected in 103 (53.3%) and 25 (25.7%), respectively.
• The number of GH-Ab positive patients was higher in the ISS group (67.5%) (p=0.013).
• In 15 of 24 (62.5%) patients whose test was studied, GH-Ab seropositivity was detected before treatment.

• In all three groups, first-year height velocity was found to be lower in GH-Ab-positive patients than in GH-Ab negative patients
  - (GHD: 8.62±2.97 vs. 10.91±3.63, I
  - SS: 5.63±0.11 vs. 8.30±1.79, non-endocrine; 7.5±1.26 vs. 10.12±2.26 cm/year;

  first-year height velocity was found to be lower in IgE positive patients (7.01±3.25 vs. 8.93±2.16; p = 0.032).

CONCLUSIONS
• This study showed that GH-Ab formation is common in children with short stature, especially those with ISS, before and during rGH treatment, and also GH-Ab positivity is associated with lower first-year height velocity.
• It also indicates that GH-Ab both could play a role in the etiology of GH-related short stature and that immunogenicity against rGH could have an impact on first-year height velocity.

REFERENCES

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