Growth Hormone Therapy in Kuwait: Characteristics and Response in Treated Children

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Introduction
- Recombinant Growth hormone (rGH) therapy is approved in many countries for treatment of short stature in a number of childhood diagnoses.
- Despite the increasing body of literature internationally on rGH use, there are limited data on the use and response rates to rGH therapy in Kuwait or the broader Middle-East which share unique ethnic and socio-cultural backgrounds.
- This study aimed to describe the pattern of use and treatment outcomes of rGH therapy in Kuwait.

Methods
- This is a cross-sectional retrospective review of children treated with rGH in The Department of Pediatrics, in a major hospital in Kuwait between December 2013 and December 2014.
- Data were extracted using data extraction forms.
- The response to rGH therapy was defined as a gain of +0.3 standard deviation score (SDS) of height per year.

Results
- A total of 60 children were treated with rGH in the center.
- Their median (Interquartile) age at rGH initiation was 9.0 (6.2, 10.7) years with no significant gender difference.
- Figure 1 describes the indications of rGH use.
- Table 1 describes the baseline characteristics at initiation of therapy.
- A total of 44 children had completed 1-year of follow-up.
- More than half of the children in all groups had significantly median height SDS change of $\geq 0.3$ SDS following the first year of therapy except for children with ISS (less than half had a significant response with a median 1-year change of 0.17 (0.16, 0.41)).
- Age at rGH initiation was negatively-associated with significant 1-year response, AOR 0.56 (95%CI: 0.04-1.49); p=0.011.

<table>
<thead>
<tr>
<th>Variable</th>
<th>GHD N = 23</th>
<th>ISS N = 12</th>
<th>SGA N = 9</th>
<th>TS and variants N = 7</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female, n (%)</td>
<td>9 (39.1%)</td>
<td>6 (50.0%)</td>
<td>4 (44.4%)</td>
<td>7 (100.0%)</td>
<td>NS*</td>
</tr>
<tr>
<td>Age, years, median (IQR)</td>
<td>6.4 (5.5, 10.7)</td>
<td>10.6 (8.1, 10.9)</td>
<td>7.8 (7.2, 9.7)</td>
<td>9.9 (5.9, 10.7)</td>
<td>NS</td>
</tr>
<tr>
<td>Pre-pubertal, n/N (%)</td>
<td>21/23 (91.3%)</td>
<td>10/12 (83.3%)</td>
<td>9/9 (100.0%)</td>
<td>5/7 (71.4%)</td>
<td>NS</td>
</tr>
<tr>
<td>Height SDS, mean (SD)</td>
<td>-2.76 (0.50)</td>
<td>-2.84 (0.52)</td>
<td>-2.49 (0.54)</td>
<td>-2.82 (0.69)</td>
<td>NS</td>
</tr>
<tr>
<td>BMI SDS, median (IQR)</td>
<td>-0.32 (-1.25, 0.27)</td>
<td>-0.44 (-1.91, -0.04)</td>
<td>-0.94 (-2.48, -0.58)</td>
<td>0.10 (-0.31, 0.65)</td>
<td>NS</td>
</tr>
</tbody>
</table>

CONCLUSION
- GHD is the most common indication of rGH therapy.
- All indications except for ISS showed significant 1-year response to therapy.
- Therapy outcomes in patients with ISS should be further investigated in Kuwait.
- Younger age at initiation of rGH therapy was independently associated with significant response to therapy suggesting the importance of identifying children with short stature and prompt initiation of rGH therapy.