Patterns of suboptimal adherence to growth hormone treatment in children living in Italy

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INTRODUCTION

The easypod™ electromechanical injection device in combination with the web-based easypod™ connect platform electronically records and transmits accurate, objective records of the date, time, and dose injected of patients receiving GH with growth disorders, allowing physicians to accurately monitor patients’ behavior.

OBJECTIVE

To study patterns of suboptimal adherence to growth hormone treatment and the effect of age, sex, and regimen on treatment adherence in children living in Italy

METHODS

Inclusion criteria:

- Data on adherence (mg injected/mg prescribed x 100) from treatment start to 24 months and background characteristics uploaded onto easypod™ connect from January 2007 to June 2019 were included.
- Suboptimal adherence was defined as <85% adherence (>1 missed injection/week).
- Logistic regression models (suboptimally adherent vs adherent) were used to study the effect of age at treatment start, sex, and regimen on adherence.

Table 1. Demographic and baseline characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>All patients (N=677)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age treatment start, years</td>
<td>10.7</td>
</tr>
<tr>
<td>Sex, %</td>
<td></td>
</tr>
<tr>
<td>Girls</td>
<td>45</td>
</tr>
<tr>
<td>Boys</td>
<td>55</td>
</tr>
<tr>
<td>Indication, %</td>
<td></td>
</tr>
<tr>
<td>GHD</td>
<td>26</td>
</tr>
<tr>
<td>Small for gestational age</td>
<td>3</td>
</tr>
<tr>
<td>Turner syndrome</td>
<td>2</td>
</tr>
<tr>
<td>Not registered</td>
<td>69</td>
</tr>
<tr>
<td>GH treatment regimen, %</td>
<td></td>
</tr>
<tr>
<td>6-day regimen</td>
<td>56</td>
</tr>
<tr>
<td>7-day regimen</td>
<td>44</td>
</tr>
</tbody>
</table>

RESULTS

• Data available for:
  - n=677 children for a 0–6-month interval (Table 1).
  - n=541 children for a 0–12-month interval.
  - n=401 children for a 0–18-month interval.
  - n=278 children for a 0–24-month interval.

• A total of 34% of all children who were 24 months on treatment were suboptimally adherent in at least one 6-month time interval (0–6, 6–12, 12–18, and 18–24 months) (Figure 2).

• Monitoring adherence to growth hormone (GH) treatment is important, because poor adherence can lead to suboptimal clinical outcomes.

• The easypod™ electromechanical injection device in combination with the web-based easypod™ connect platform allows proactive monitoring of adherence.

• The prediction, together with individual reasons for suboptimal adherence, may determine when a child needs support and which personalized intervention strategy can be applied to improve adherence.

CONCLUSIONS

The easypod™ connect platform with automatic adherence recording and data transmission allows proactive monitoring of adherence.

Further research is needed to apply more advanced statistics, such as machine learning, to predict suboptimal adherence continuously and in real-time.

Understanding adherence patterns can be helpful to target children at risk for suboptimal adherence.

To study patterns of suboptimal adherence to growth hormone treatment in children living in Italy, an affiliate of Merck KGaA.

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Abbreviations: GH, growth hormone; GHD, growth hormone deficiency.

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