Does better adherence to growth hormone (GH) treatment using jet rather than needle delivery translate into improved growth outcomes?

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Background
We previously reported improved adherence with growth hormone treatment in children using jet rather than needle delivery devices, in a large nationwide cohort [1]. We wanted to assess whether this also translated into significant improvement in growth outcomes.

Methods
• 75 local patients were identified from the national cohort
• 55 met the eligibility criteria for indication (GHD) and age (<16 years).
• Adherence was evaluated using the PDC index which was calculated using the following equation.
\[ PDC = \frac{\text{Number of days with access to viable heads}}{\text{Number of days receiving treatment}} \]
• Patients with PDC score >0.8 were considered adherent.
• Standard deviation scores for the following auxology parameters were compared:
  - Height (HTSDS)
  - Height velocity (HVSDS)
  - IGF-1 (IGF1SDS)
• Comparisons were made using non parametric statistics, within and between adherent and non adherent groups
  - 1 year after the start of jet-delivered GH
  - At end of the assessment period

Results
• A large proportion of patients (67%) are classed as adherent (Table 1).
• Adherent (n=33) and non-adherent (n=22) patients demonstrated comparable increments in HTSDS, HVSDS and IGF1SDS, both at 1 year and end treatment (p>0.05).
• Significant longitudinal intragroup improvements occurred in adherent patients (n=33) in all three auxology parameters, both at 1 year and at end treatment. (p<0.05) (fig 1)
• Non adherent patients (n=22) showed significant improvement in HVSDS at 1 year and at end treatment (p<0.05), but not in HTSDS or IGF-1SDS at any point in time. (fig 1)
• 9 patients have reached their final height (6 adherent, 3 non adherent), all with adult HTSDS close to individual target MPHSDS (p<0.05).

Conclusions
• Jet-delivered growth hormone seems to significantly improve height velocity SDS in this cohort, regardless of adherence.
• Improved adherence with ZomaJet® may translate into better height outcomes.
• This hypothesis will be explored in a larger local dataset comparing jet with needle devices.