

Cost feasibility study: Performing GH stimulation test only, not full APFTs for "simple short stature"

Sloan SE, O' Donnell J, Wright NP, Dimitri PJ, Elder CJ

Sheffield Children's Hospital NHS Trust, Sheffield, UK

Aim: To evaluate the clinical and cost saving implications of performing only a growth hormone (GH) stimulation test when investigating children with "simple short stature", rather than performing a full anterior pituitary function test (APFT).

Background

At our hospital we currently investigate children with possible growth hormone (GH) deficiency, but who are healthy, with a normal short stature screen, and without suspicion of other pituitary dysfunction ("simple short stature"), with full dynamic anterior pituitary function tests (APFT). An abnormal GH peak leads to a second GH stimulation test. We studied the clinical and cost implications of only performing a GH stimulation test initially, followed by full APFT if the initial GH peak was low, to ascertain the risk of missing or delaying the diagnosis of significant pituitary pathology.

Methods

We performed a retrospective case notes review of all patients having an APFT to investigate "simple short stature" from January 2011 to December 2014. The results of the APFT were examined to determine:

- The response to GH stimulation
- Abnormal or suboptimal responses of other pituitary hormones
- If the abnormalities found were clinically significant

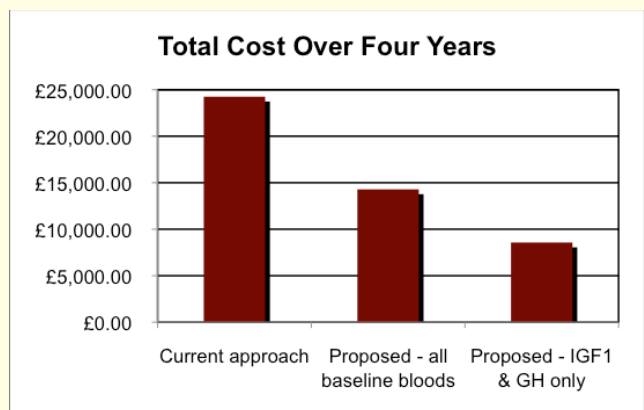
The costs of equipment, investigations and drugs were combined to determine the cost of the different protocols, and the potential cost savings over the four years calculated.

| | Current Approach | Proposed Approach |
|------------------------------------|---------------------|--|
| First investigation | APFT | GH stimulation test Full baseline bloods OR GH & IGF1 only |
| Second investigation (if required) | GH stimulation test | APFT |

Results

Over the four years studied 55 patients had an APFT for "simple short stature", of which 11 had an abnormal GH peak. GH deficiency was confirmed on second testing in four patients, and in two whom only needed a single test for diagnosis. Five patients had other minor biochemical abnormalities, all of which were deemed clinically insignificant.

Testing using the current approach cost £24,255.71 over four years, the proposed change would cost £14,289.80 (with full anterior pituitary baseline bloods) or £8,575.30 (with IGF1 and GH only), resulting in a cost saving of £9,965.91 or £15,680.41 (£181.20 or £285.10 per patient) over four years.



Conclusions

If a GH stimulation test alone was used to investigate simple short stature, rather than full APFT, over the last 4 years:

- 46 full APFTs would not have been performed
- 5 false positive results would have been avoided
- No other clinically significant pituitary pathology would have been missed
- £9,965.91 to £15,680.41 would have been saved (equivalent to £181.20 to £285.10 per patient)

A change of practice is being instigated locally in view of these findings.