

Oral glucose suppression test (GST) for making the diagnosis of GH excess

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1. The “**gold standard**” for making the diagnosis of GH excess is a **failure to suppress serum GH levels to less than 1ng/mL** after a 1.75g/kg oral glucose challenge (max. 75g)
2. This test measures the ability of IGF-1 to suppress GH secretion because the glucose load results in insulin secretion, leading to suppression of IGFBP-1, which results in an acute increase in free IGF-1 level.
3. The increased free IGF-1 suppresses GH secretion within 30 to 90 mins.

檢查流程：

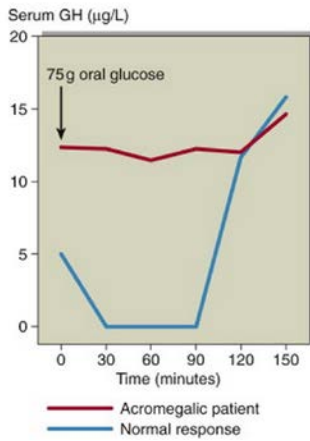
1. The patient should be fasted overnight for 10-14 hrs
2. Check 0' min GH, glucose, IGF-1
3. Drink 1.75g/kg (max. 75g) glucose load within 5 mins
4. Check 30', 60', 90', 120' mins GH and glucose

Time (mins)	Plasma glucose	Growth hormone	IGF-1
0			
Drink 1.75g/kg (max. 75g) glucose			
30			
60			
90			
120			

Interpretation:

1. GH suppresses to <2 mIU/L (0.7µg/L) in normal individuals. [Brook's CPE]
2. Failure to suppress and sometimes a paradoxical rise in GH concentrations is characteristic of GH hypersecretion.
3. A nadir GH levels less than 1 µg/L: rule out acromegaly
4. If GH fails to drop to below 1 ng/mL (1 µg/L), the patient is diagnosed as having acromegaly.
5. GH may not be suppressed in the presence of liver or kidney disease, poorly controlled diabetes mellitus, malnutrition, anorexia, pregnancy, or estrogen therapy, or in late adolescence.
6. The diagnosis of acromegaly requires measurement of a GH nadir during GST that is greater than 0.4 µg/L or 1 µg/L (depending on GH standards employed) together with elevation of age-adjusted IGF-1levels. [William]

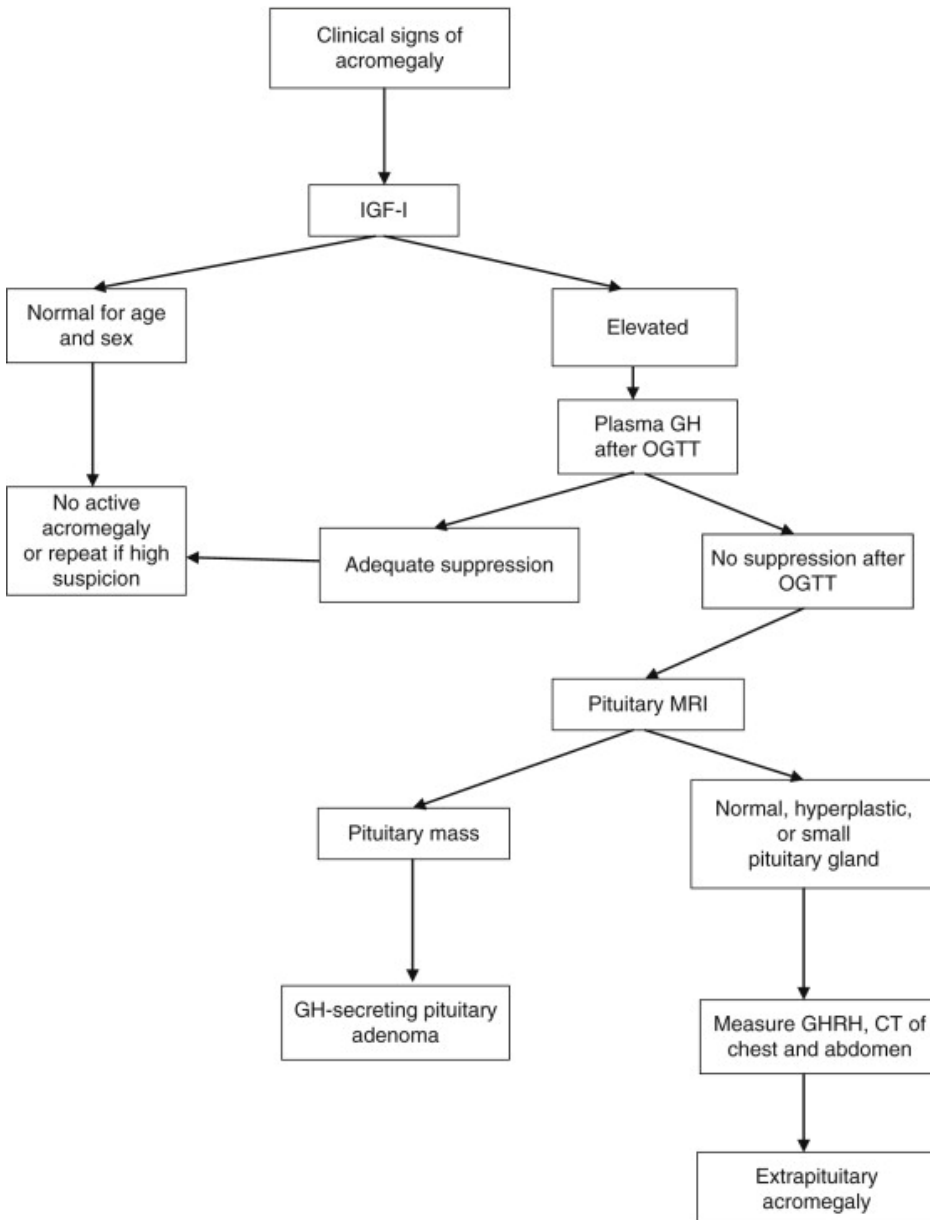
7. The response of GH in a glucose tolerance test in a normal and acromegalic patient.



補充：

Diagnostic algorithm for acromegaly. OGTT: oral glucose tolerance test.

Modified from: Cordero RA, Barkan AL. Diagnosis of acromegaly. *EndocrMetabDisord.* 2008;9:13–9, and Giustina et al.



Reference:

1. Sperling, Pediatric Endocrinology, fourth edition
2. Practical guidelines for diagnosis and treatment of acromegaly, Endocrinology and Nutrition, 2013-10-01Z, Volume 60, Issue 8, Pages 457.e1-457.e15
3. Shlomo Melmed, Kenneth S. Polonsky, P. Reed Larsen and Henry M. Kronenberg, Williams Textbook of Endocrinology, 12th edition, CHAPTER 9, 229-290
4. Charles G.D. Brook, Brook's clinical Pediatric Endocrinology, 6th edition, Chapter 6, P.152