

# Growth hormone stimulation test

The [growth hormone](#) (GH) stimulation test measures the ability of the body to produce [GH](#).

The test is performed by administering the amino acid [arginine](#) in a vein to raise hGH levels. The test measures the ability of the [pituitary](#) to secrete growth hormone in response to the arginine.

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In a study in all children the pituitary [hormones](#) basal levels were assessed at least five years post-TBI. [Growth hormone stimulation tests](#) were performed 3-4 years post-TBI in children with [Growth hormone deficiency](#) (GHD) 1-year post-TBI and in all children with low height velocity ( $\leq$ -1 DS) or low IGF-1 ( $\leq$ -2 DS). Central [precocious puberty](#) (CPP) was confirmed by GnRH stimulation test.

61/66 children were followed-up 7 [5-10] years post-TBI (median; [range]); 17/61 children had GHD 1-year post-TBI, GHD was confirmed in 5/17 patients. For one boy, with normal pituitary function 1-year post-TBI, GHD was diagnosed 6.5 years post-TBI. 4/61 patients developed CPP, 5.7 [2.4-6.1] years post-TBI. Having a pituitary dysfunction 1-year post-TBI was significantly associated with pituitary dysfunction or CPP more than five years post-TBI.

[Severe traumatic brain injury](#) in childhood can lead to permanent pituitary dysfunction; [Growth hormone deficiency](#) and Central [precocious puberty](#) may appear after many years. Dassa et al., recommended systematic hormonal assessment in children one-year after severe TBI and a prolonged monitoring of growth and pubertal maturation. Recommendations should be elaborated for the families and treating physicians <sup>1)</sup>.

<sup>1)</sup>

Dassa Y, Crosnier H, Chevignard M, Viaud M, Personnier C, Fletchner I, Meyer P, Puget S, Boddaert N, Breton S, Polak M. Pituitary deficiency and precocious puberty after childhood severe traumatic brain injury: a long-term follow-up prospective study. Eur J Endocrinol. 2019 Mar 1. pii: EJE-19-0034.R1. doi: 10.1530/EJE-19-0034. [Epub ahead of print] PubMed PMID: 30884465.

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