

Levels of Growth-Hormone-Releasing Factor During Growth Hormone Stimulation Tests and During Puberty: Two Reports

Donnadiou and co-workers¹ established an assay for growth-hormone-releasing factor (GRF) and evaluated the concentration in the plasma both in children receiving various stimulation tests for growth hormone (GH) release and in children at various stages of puberty.

This assay measured GRF-40 and GRF-44 equally and required the extraction of 2 ml of plasma. Eight samples collected over a two-hour period from each of three boys varied from 43-73 pg/ml in the first, to 8-22 pg/ml in the second, and to 41-95 pg/ml in the third.

In the first report, these authors found that L-dopa stimulation of GH release is preceded by a significant rise in GRF. In contrast, when ornithine infusion is used as a pharmacological agent to cause GH release, GRF falls. The authors conclude that different mechanisms account for GH release by these two agents.

In the report by Argente and colleagues,² basal GRF concentrations were measured in samples from 180 children. These were collected between 8 AM and 10 AM after an overnight fast. Correlations between basal GRF values of children in various stages of puberty and steroid and insulin-like growth factor I (IGF-1) levels were

sought by the investigators.

As shown in the Table, basal levels in girls increased progressively during the first four stages of puberty and fell in stage V. Basal levels in boys increased from stage I to stage II and to stage III progressively. The values plateaued during stage IV and then fell in boys with stage V sexual development. The pubertal values in girls were significantly higher than in boys and increased progressively until stage IV, after which they fell markedly. There was no correlation between plasma GRF levels and sex steroids or growth velocity. Positive correlation was found between basal GRF values and IGF-1 values in both sexes.

Fourteen boys with delayed puberty had values of 30.8 ± 7.5 pg/ml. These were comparable to the values found in boys in stage I of puberty.

1. Donnadiou M, Evain-Brion D, Tonon MC, et al. *J Clin Endocrinol Metab* 1985;60:1132.
2. Argente J, Evain-Brion D, Munoz-Villa A, et al. *J Clin Endocrinol Metab* 1986;63:680.

Editor's comment—These authors are to be commended for developing an assay that permits evaluation of the physiologic role that GRF plays in the secretion of GH. Readers probably will want to follow the literature closely to observe the reporting of further observations pertaining to the role that GRF plays (and does not play) in the normal and abnormal physiology of GH secretion.

Table: GRF Levels During the Stages of Puberty

	Prepubertal	Early Pubertal	Midpubertal		Late Pubertal
	I	II	III	IV	V + Menses
Girls	30.3 ± 4.3	56.6 ± 6.1	143.7 ± 21.3	176.6 ± 35.7	60.5 ± 6.0
Boys	48.1 ± 5.2	75.9 ± 4.3	103.5 ± 13.8	99.3 ± 9.3	60.6 ± 5.7