

Pituitary Structural Abnormalities In Idiopathic Isolated Growth Hormone Deficiency

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Background

Isolated growth hormone deficiency is the most common pituitary hormone deficiency, affecting 1/3,480–1/10,000 live births. Most cases are idiopathic and have been shown to have a high incidence of pituitary structural abnormalities. The findings on magnetic resonance imaging range from interrupted or thin pituitary stalk, absent or ectopic posterior pituitary, or anterior pituitary hypoplasia or aplasia, and therefore support the involvement of developmental and congenital factors. The presence of pituitary structural abnormalities may influence the severity of growth hormone (GH) deficiency. Our aim was to assess the effect of pituitary abnormalities on idiopathic isolated growth hormone deficiency (IIGHD).

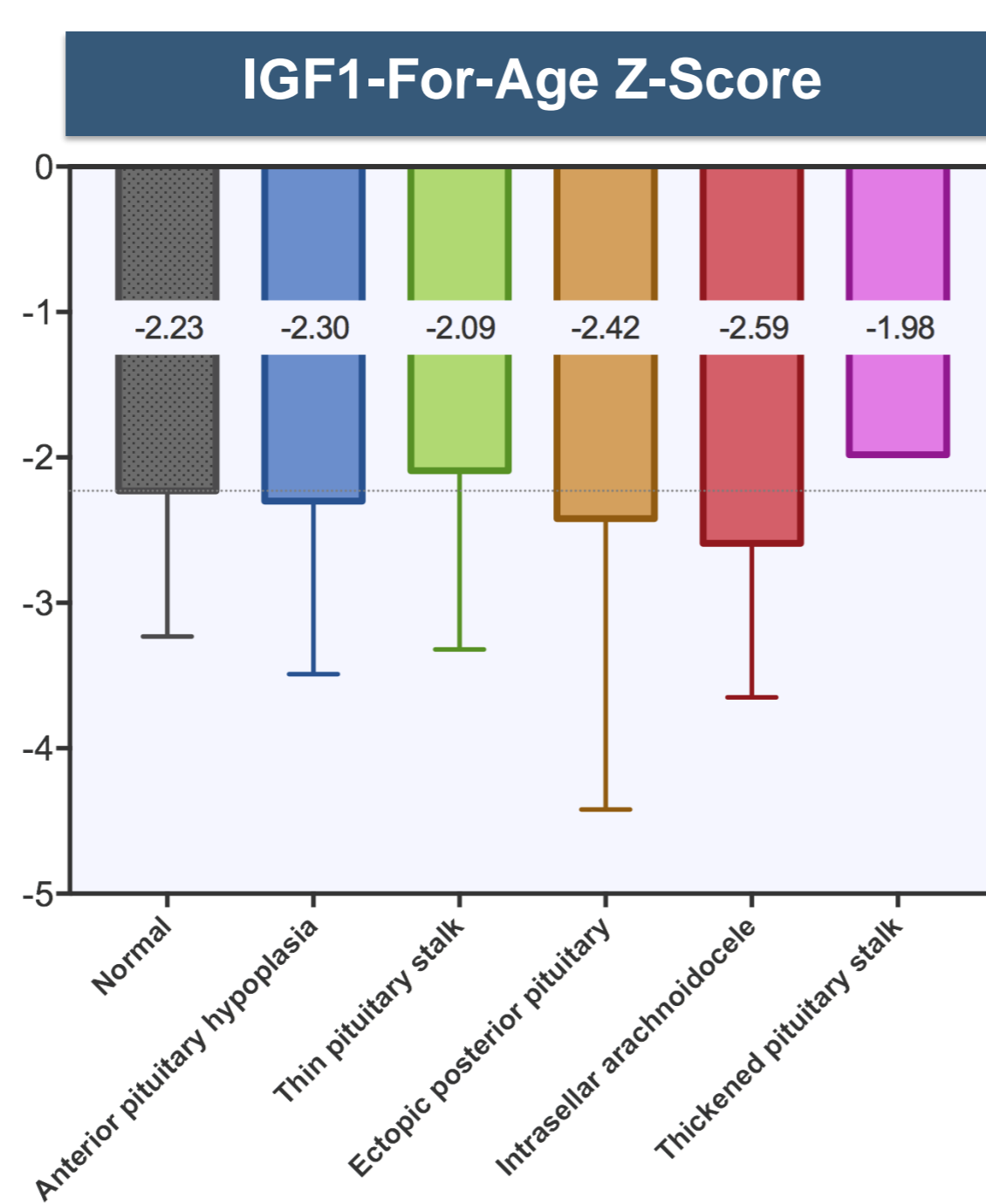
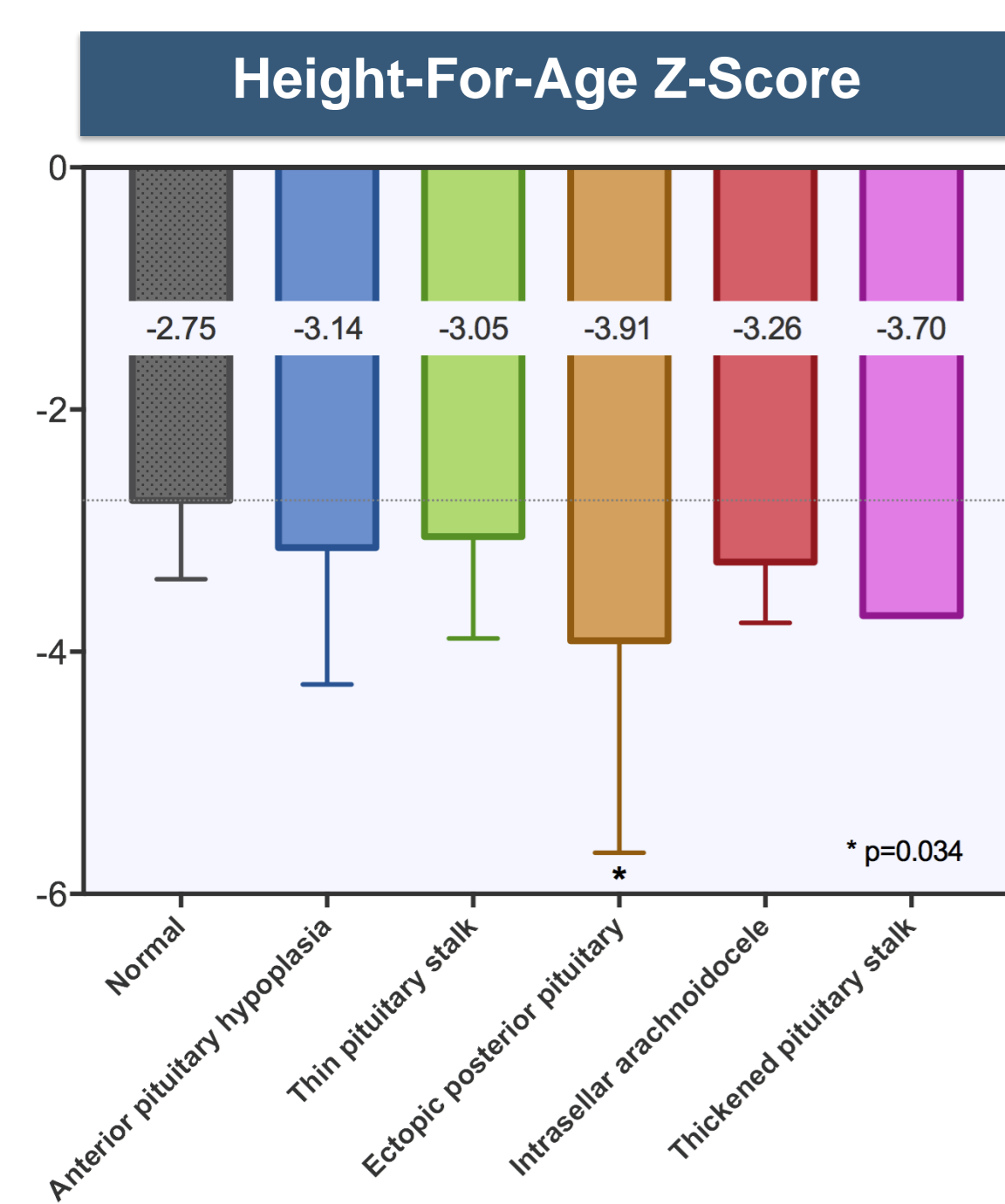
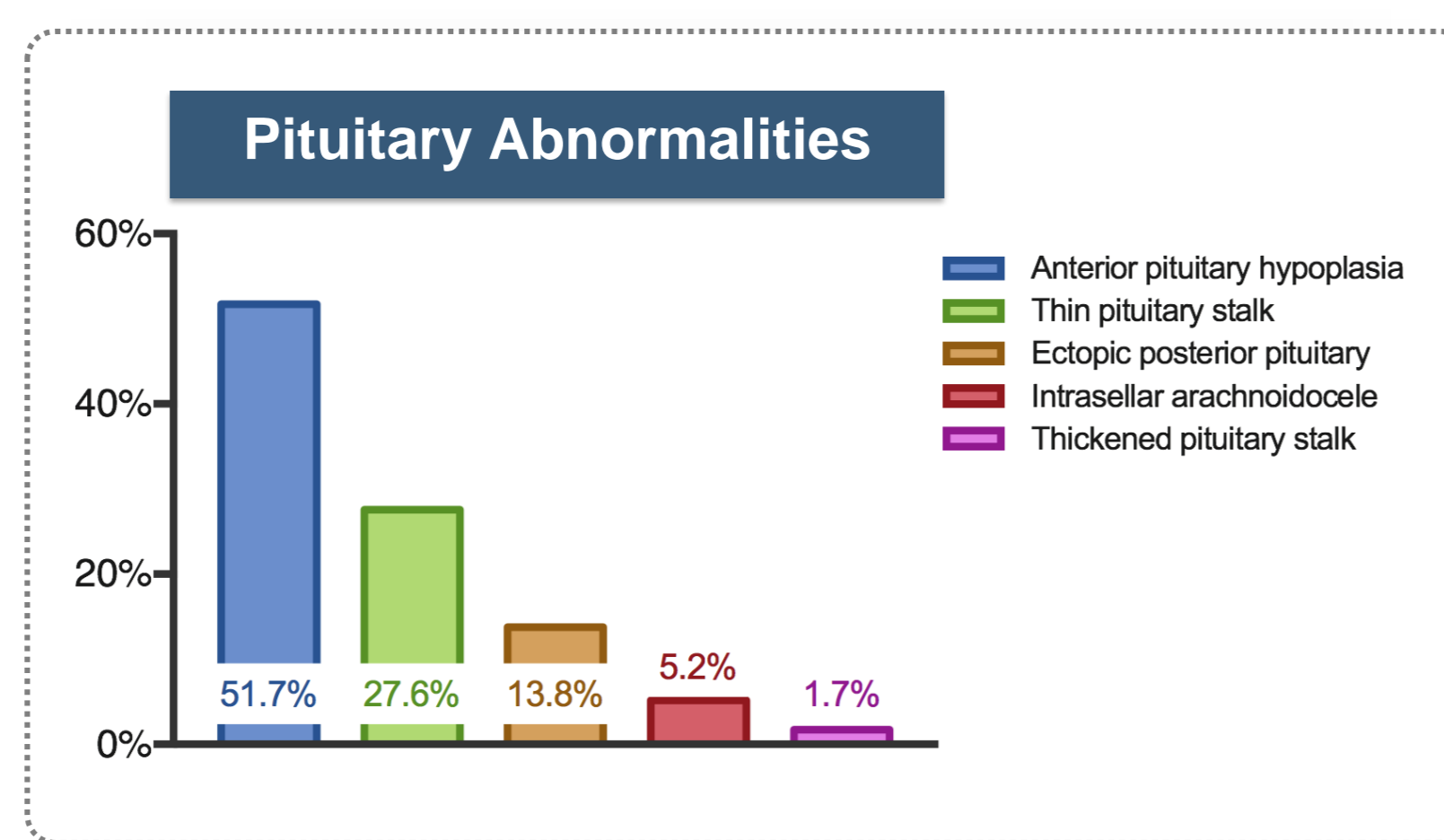
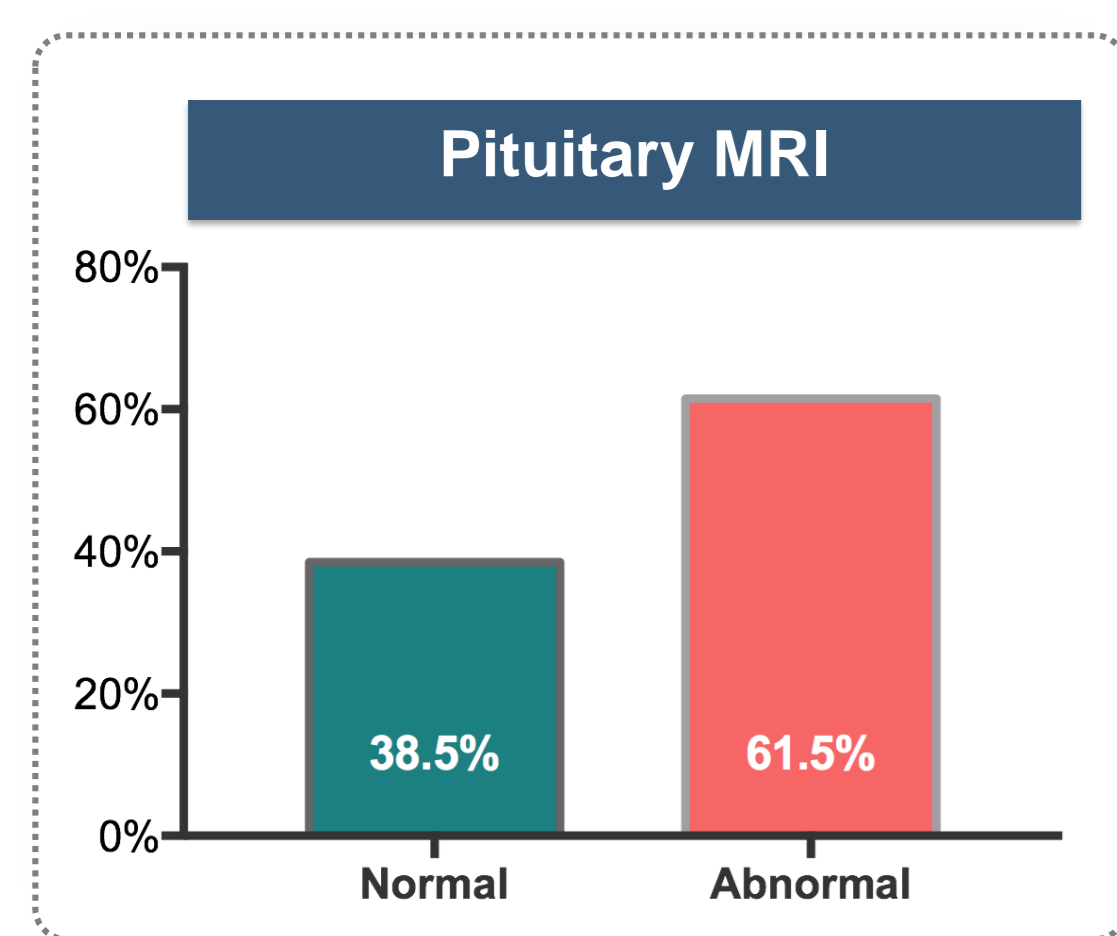
Research Design and Methods

We analysed 65 children with IIGHD and pituitary magnetic resonance imaging (MRI) data. Height-for-age and IGF1-for-age Z-scores, and GH requirements were compared between patients with or without pituitary MRI abnormalities. Height-for-age Z-scores were calculated according to World Health Organization Child growth standards. We calculated the Z-scores of IGF-1 levels according to age and sex. Children with familial history of GHD or idiopathic short stature were excluded.

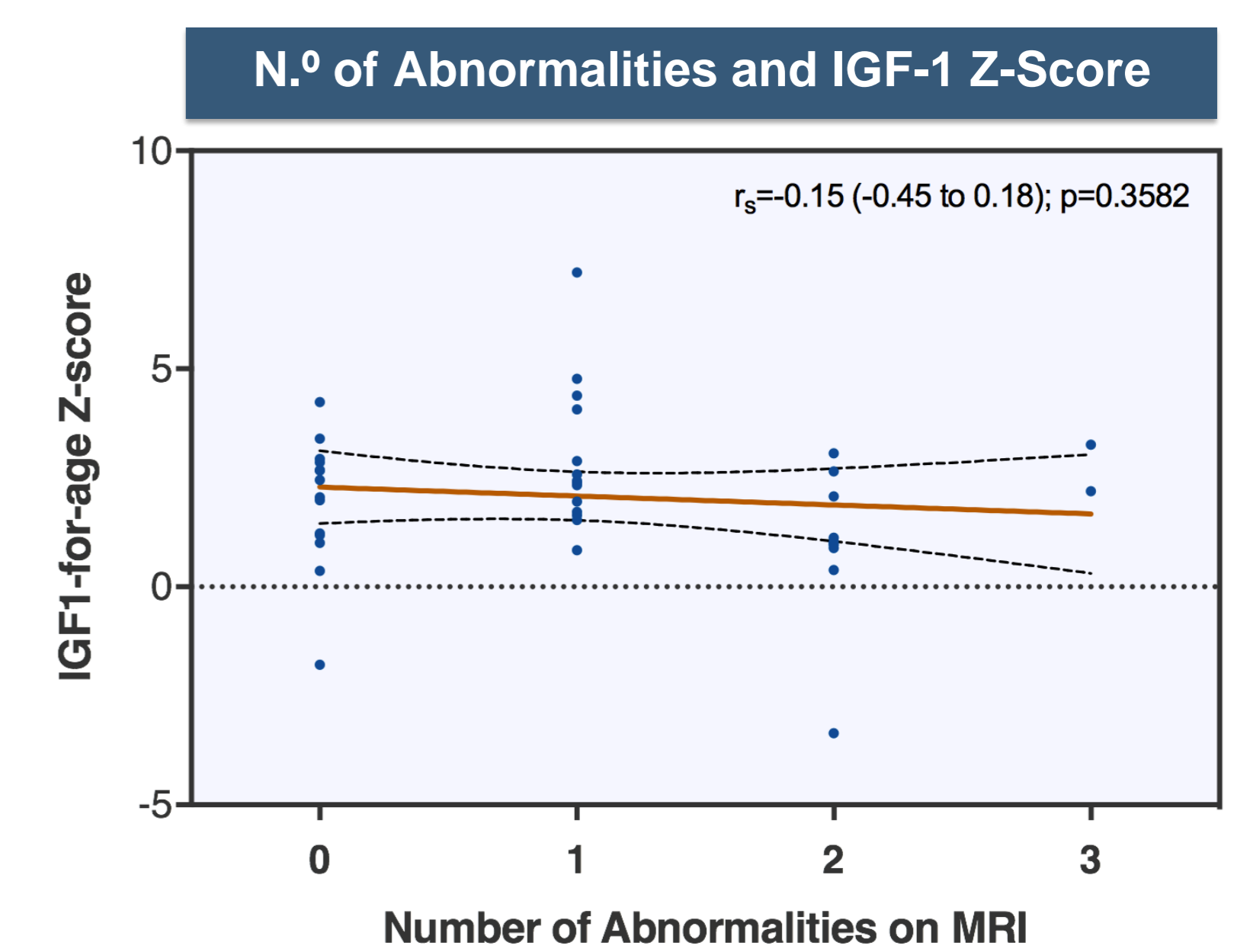
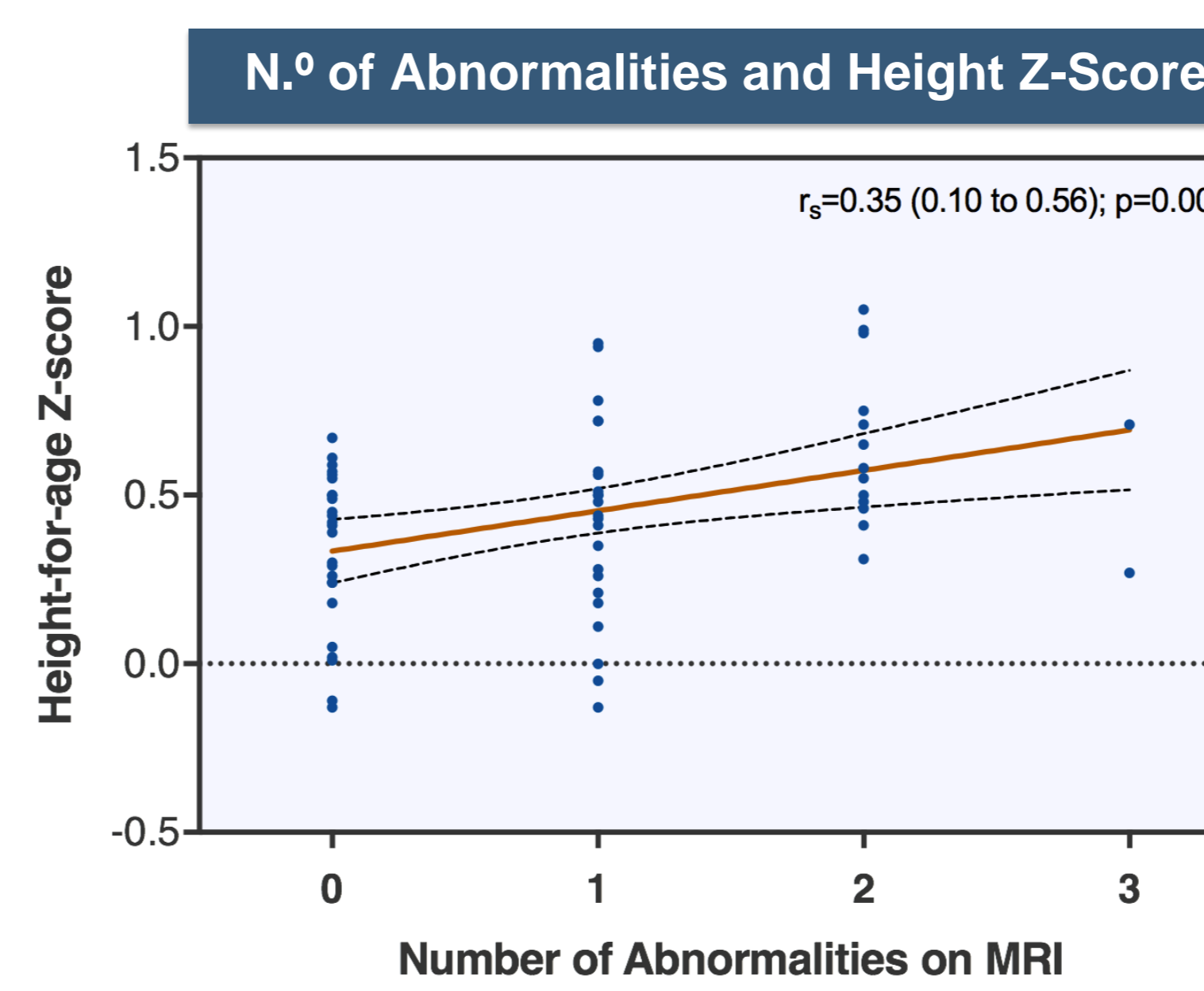
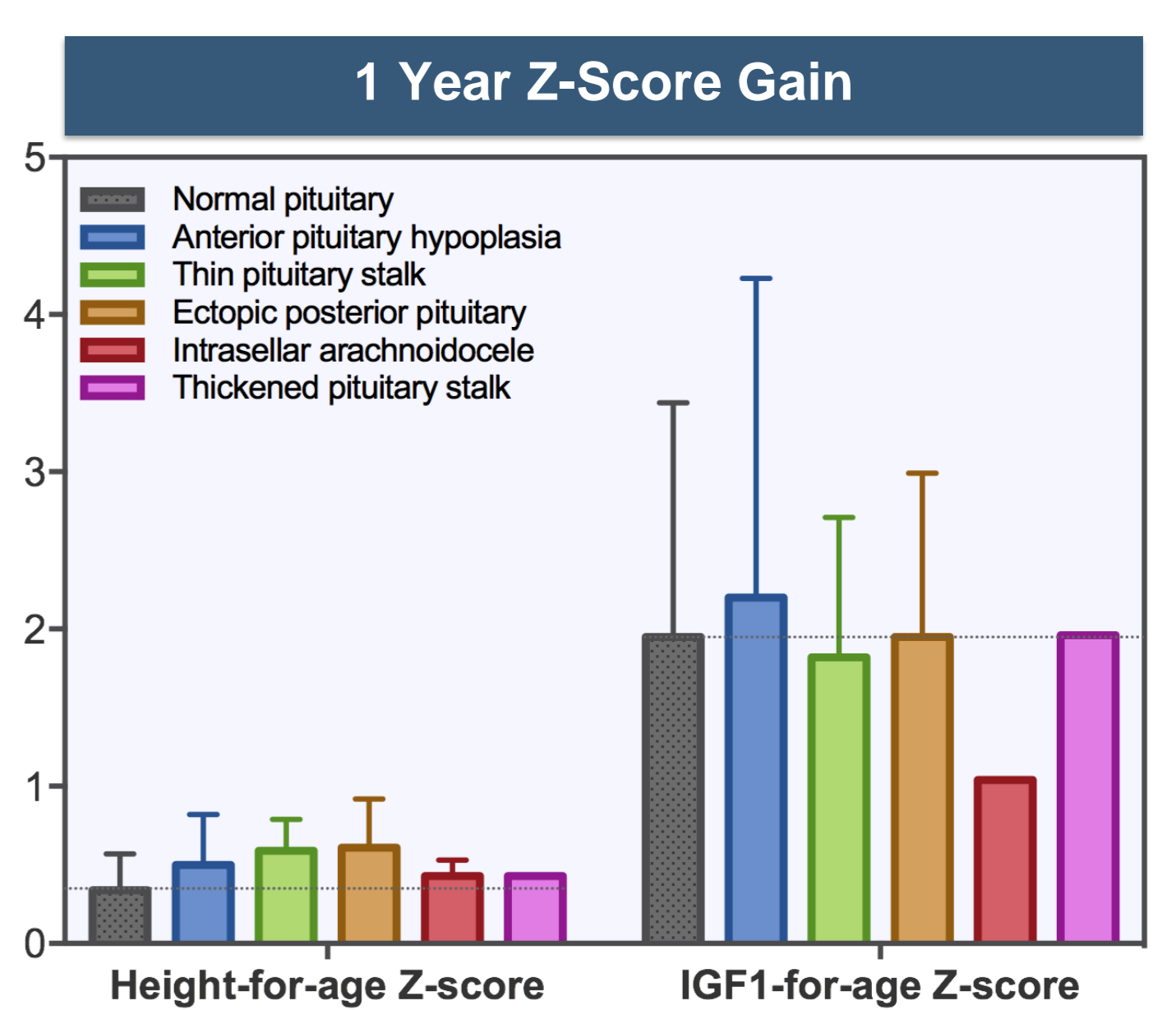
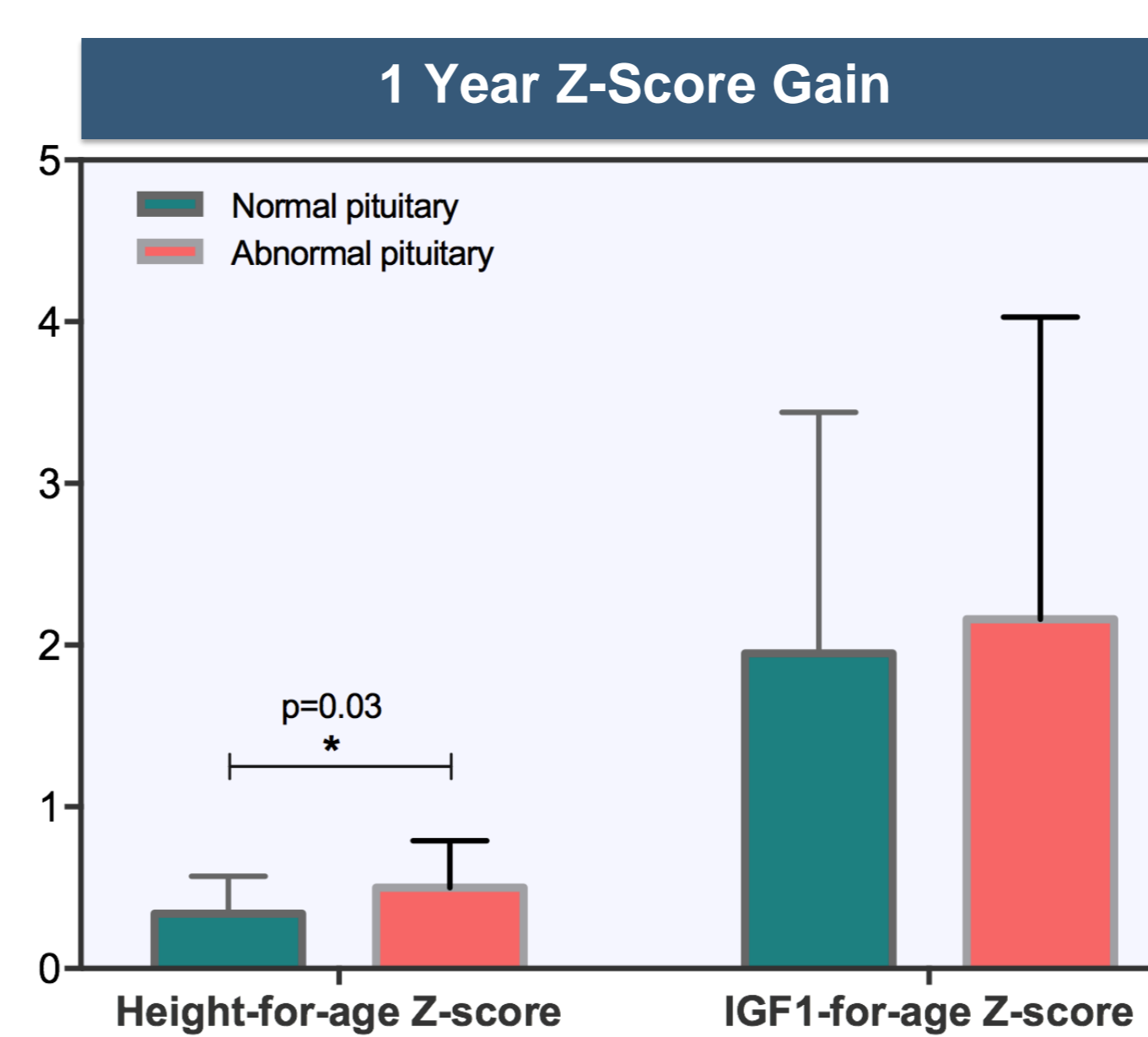
Pre-treatment

Variable	Pituitary		P
	Normal	Abnormal	
Gender (female) [¶]	24.0(6)	25.0 (10)	0.927
Age (years) [§]	11.77±2.64	11.29±3.12	0.426
Birth weight (g) [§]	3,125.23±486.38	2,794.03±934.39	0.168
Birth length (cm) [§]	47.89±2.19	47.48±2.85	0.375
Bone age – biologic age (years) [§]	-1.74±0.98	-1.96±1.23	0.548
Height (cm) [§]	134.04±16.56	123.24±15.50	0.023
Height-for-age Z-score [§]	-2.75±0.65	-3.09±1.02	0.158
IGF-1 (ng/mL) [§]	122.86±73.83	137.32±135.33	0.696
IGF1-for-age Z-score [§]	-2.23±1.00	-2.02±1.44	0.752
IGFBP3 (mcg/mL) [§]	3.64±1.12	3.38±1.54	0.348

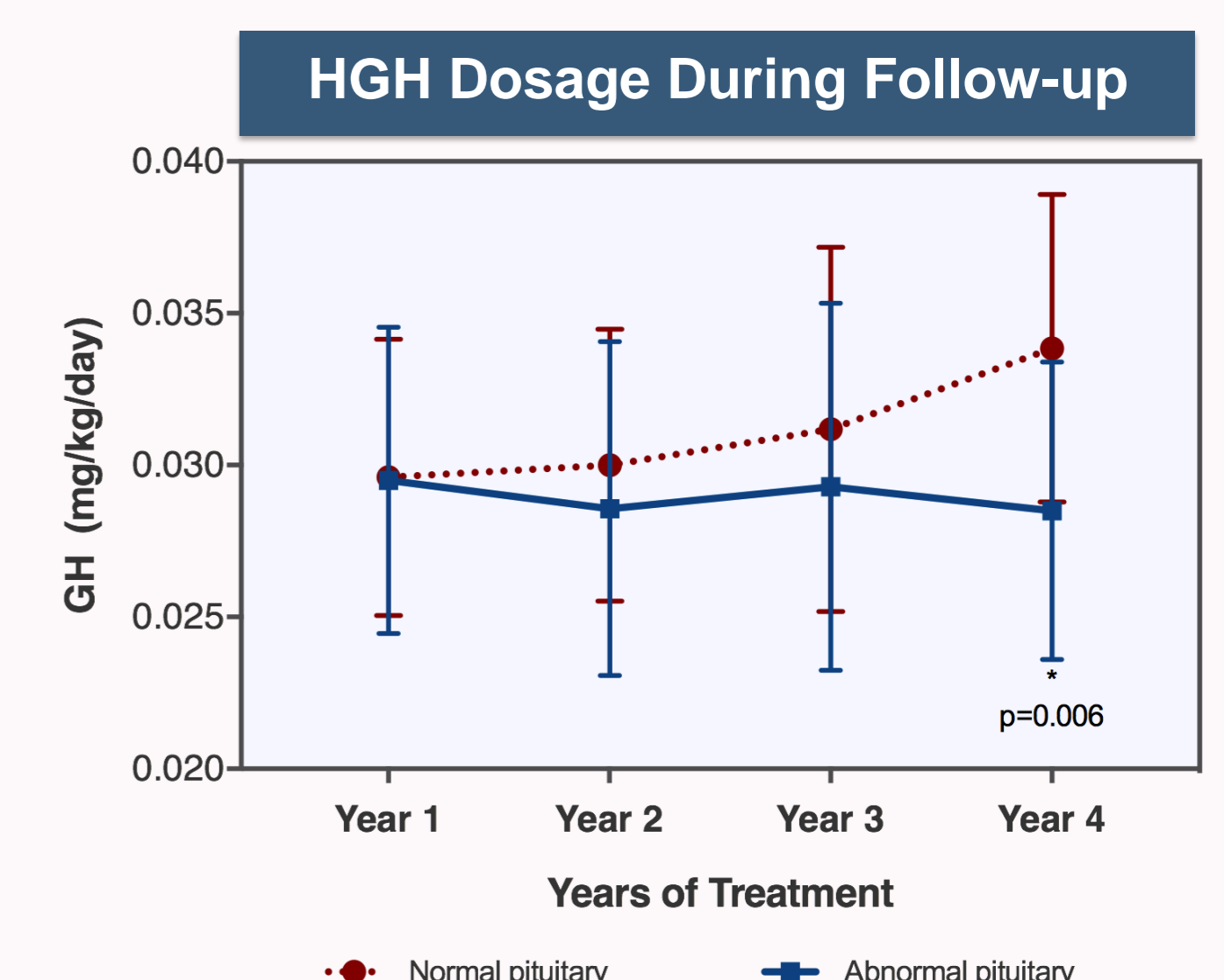
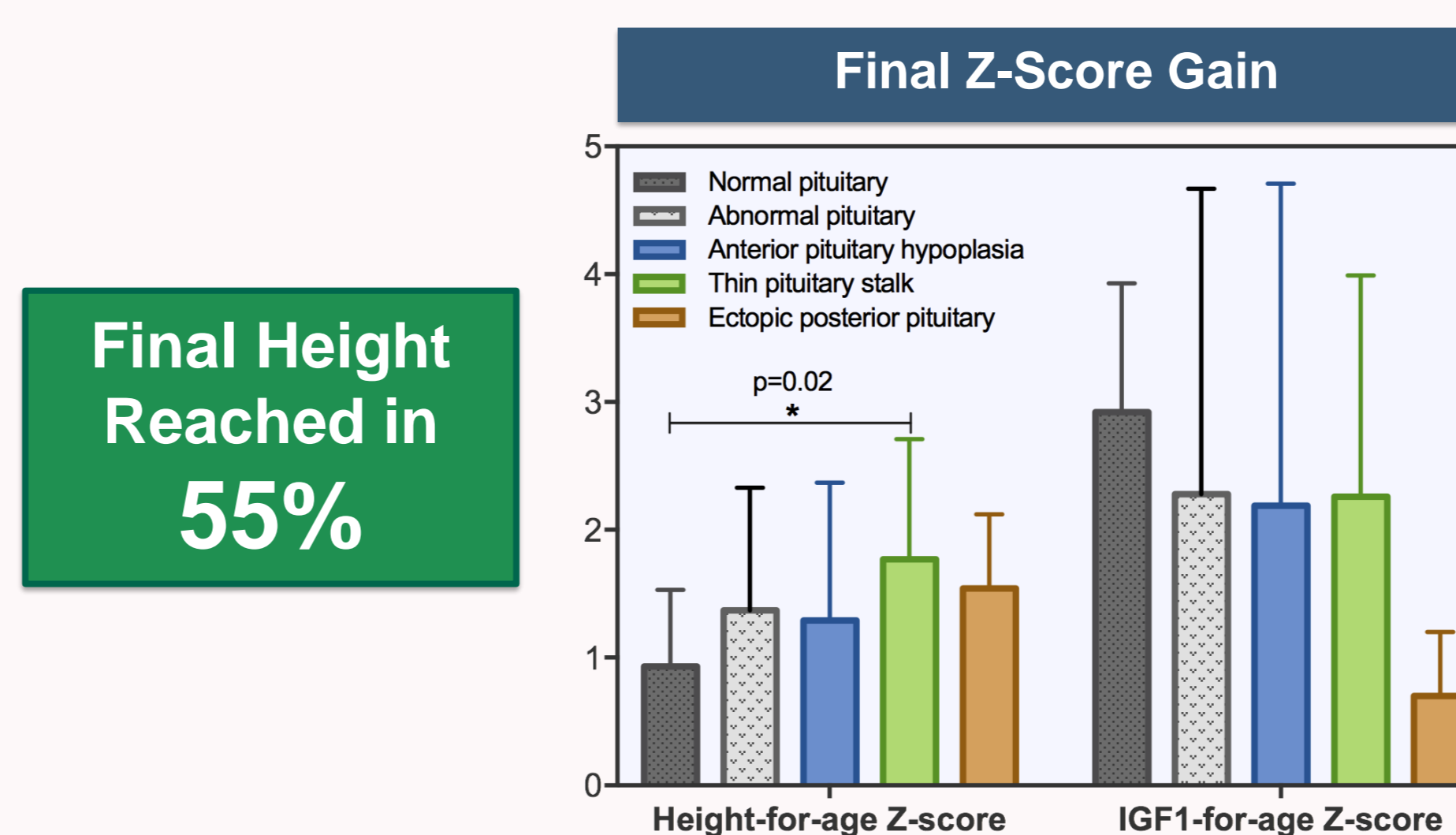
§ - μ±σ; ¶ - Frequency



1 Year After Treatment



Final Height



Conclusion

Pituitary abnormalities were frequent in our cohort of idiopathic isolated growth hormone deficiency and were associated with higher stature improvement during the first year of treatment. Furthermore, children with pituitary abnormalities had lower GH requirements during follow-up, particularly after the third year of treatment. Irrespective of the aetiology, patients with structural abnormalities will need lifelong follow-up in adulthood owing to the risk of developing other pituitary hormone deficiencies.