ASSOCIATIONS BETWEEN PITUITARY ABNORMALITIES AND TREATMENT RESPONSE IN CHILDREN WITH GROWTH HORMONE DEFICIENCY

First multicenter study in Portugal

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Background/Aims:

Magnetic resonance imaging (MRI) is used to investigate the etiology of growth hormone deficiency (GHD). There is a close relationship between structural changes in the pituitary gland and clinical status.
We aimed to investigate the relationship between MRI findings and clinical symptoms and treatment response in children with GHD

Methods:

- Retrospective study; Multicenter (9 Department of Pediatric Endocrinology of Portugal)
- Data collection: 2006-2016
- Inclusion criteria: GHD children treated for at least two years whose magnetic resonance imaging was available.
- Exclusion criteria: children born small for gestational age, chromosomal/dysmorphic syndromes, bone dysplasia, chronic systemic diseases and acquired GHD
- Clinical presentation, hormonal status and first year growth response were compared between patients with pituitary abnormalities and patients with normal MRI.
- Data were shown in mean± standart deviation

Results:

Table 1. **Clinical findings of the patients in the study**

Number of patients	321
Male/Female	217 / 104
Isolate GHD/Multiple pituitary hormone deficiencies	279 (87%) / 42 (13%)
Target height SDS	-0,87 ± 0,86
Pituitary MRI normal/Pituitary MRI with pathological findings	180 (56%) / 141 (44%)
At start of GH treatment: • Age (year) • Bone age (year) • Height SDS • BMI SDS • GH dose (mcg/kg/d)	 9,68 ± 4 7.5 ± 6,3 -3,05 ± 1,03 -0,28 ± 0,6 27,5 ± 4,4

Table 2. **Pituitary MRI with pathological findings**

Isolated abnormalities • Hypoplastic anterior pituitary • Thin pituitary stalk • Ectopic posterior pituitary • Others	68 43 (63%) 10 (15%) 6 (9%) 9 (13%)
Two abnormalities	42
Ectopic posterior pituitary+Aplasia / Hypoplastic anterior pituitary+stalk defects	31

Table 3. **Comparison of auxologic parameters in patients with pituitary MRI normal and patients with pituitary MRI with pathological findings before and after 12 months of GH therapy**

	Pituitary MRI Pathology - 180 (56,1%)	Pituitary MRI Pathology + 141 (43,9%)	p
At start of GH treatment: • Age (year) • Height SDS	 10,61 ± 3,7 -2,77 ± 0,84	 8,5 ± 4,18 -3,02 ± 1,2	 0,000* 0,001**
First year GH treatment: • Height SDS • Height velocity SDS	 -2,25 ± 0,91 00,48 ± 0,57	 -2,42 ± 1,27 0,77 ± 1,04	 0,351** 0,001**

* Student´s t test; ** Mann Whitney U test

Conclusions:

MRI is a useful tool in assessing GHD patients. The presence and type of hypothalamic-pituitary abnormalities provides valuable information regarding the likely severity of the GHD and predicting treatment response.

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