

Could brain MRI replace GH stimulation tests in the work-up of GH deficiency in the first years of life?

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Background

Currently, the diagnosis of GH deficiency (GHD) in infants and young children is based on the assessment of GH serum levels either during spontaneous hypoglycaemia or after pharmacological stimulation tests.

However, GH cut-off values have not been standardized and provocative tests may be unsafe in the first years of life.

Work hypothesis

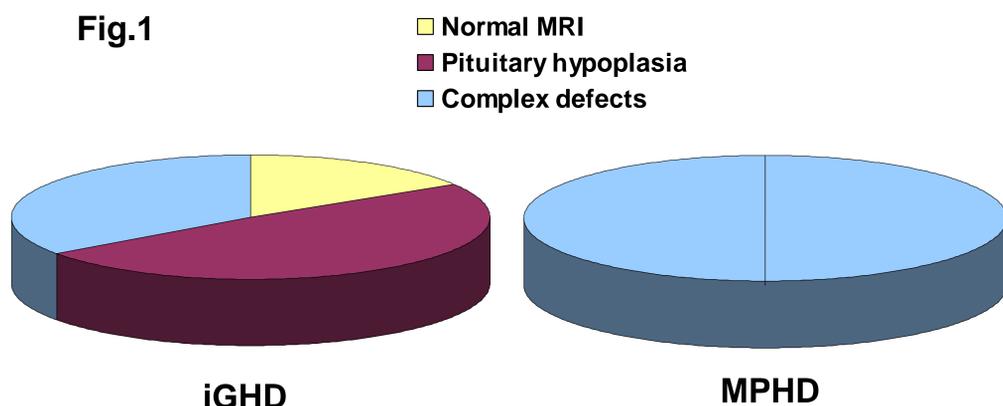
Brain MRI may replace GH measurements in diagnosing GHD in infancy and young childhood.

Patients and Methods

Sixty-eight children diagnosed with GHD according to standard work-up before 4 years of age were retrospectively studied to:

1. evaluate the prevalence of hypothalamic-pituitary defects;
2. analyze the associations of brain abnormalities with age and presence of isolated GH deficiency (iGHD) versus multiple hormone pituitary deficiency (MPHD).

Fig.1



Results

The prevalence of MPHD was 45.6% and of iGHD 54.4%.

In patients with iGHD, brain MRI showed abnormalities in 83.8% of cases: 18 isolated pituitary hypoplasia and 13 complex defects (ectopic posterior pituitary with or without pituitary hypoplasia, pituitary stalk agenesis or midline defects).

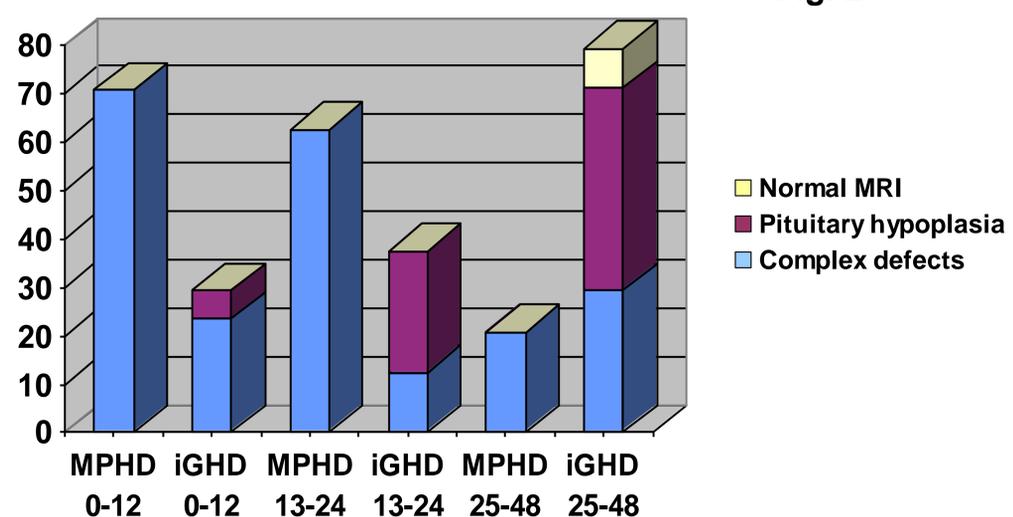
In patients with MPHD, MRI showed complex brain alterations in 100% of cases (Fig.1).

The cohort was subdivided into 3 groups, according to the exact age at diagnosis, when available: <12 (n=17), 13-24 (n=16) or 25-48 (n=24) months.

In the first 2 years of life MRI showed hypothalamic-pituitary abnormalities in all cases, regardless the diagnosis (Fig. 2).

Complex defects were found in 94.1% of patient <12 months and in 75% of patient between 13 and 24 months.

Fig. 2



Conclusion

Our data suggest that brain MRI may represent the first and, in most cases, only investigation to be performed for diagnosing GHD in infants and young children.