Brain MRI in evaluation of endocrine diseases of childhood : causal and incidental lesion

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Background

Brain MRI is an essential tool in the diagnosis of neuroendocrine disorders and aims at detecting anatomical abnormalities and tumors. However, it may lead to the identification of unrelated or questionably related abnormalities in the hypothalamic-pituitary region and/or the rest of the brain parenchyma.

Objectives

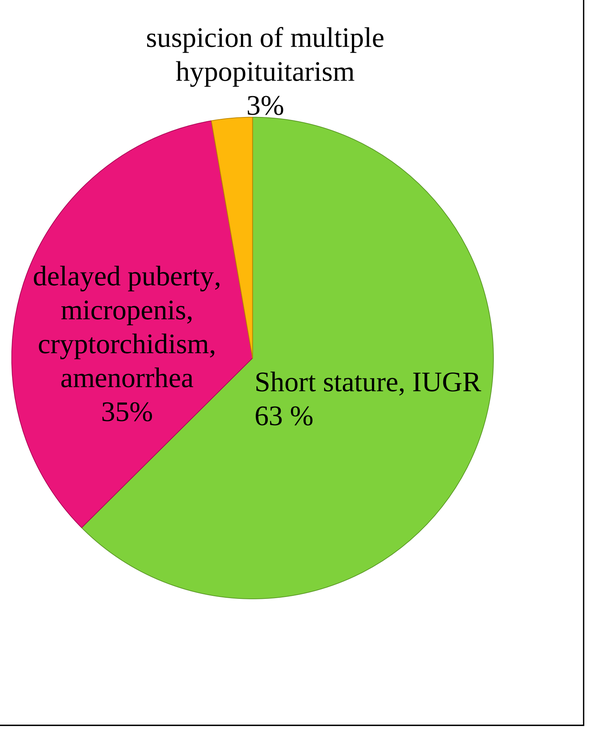
To establish the prevalence of causal lesions on brain MRI of children evaluated for hypopituitarism, assess the frequency and nature of incidental.

Methods

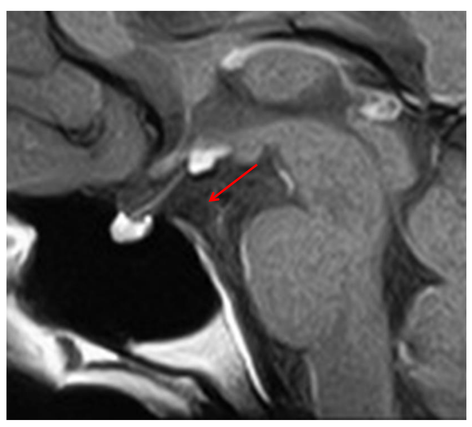
Retrospective single-center study based on the analysis of brain MRI realized with focus on the pituitary region (radiological protocol) from January 1st 2007 to December 31st 2008 for suspected hypopituitarism.

Results

Initial symptoms of patients

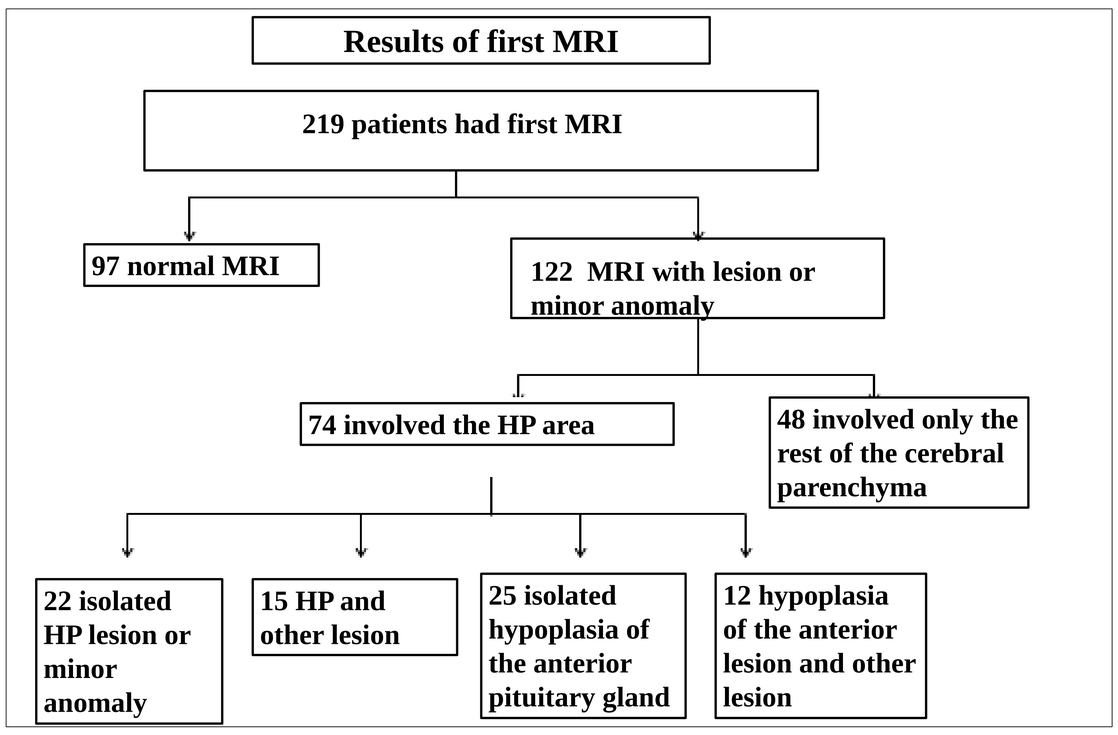


Ectopic post-hypophysis



Légendes :
IUGR : intra-uterine growth restriction
HP : hypothalamic-pituitary
GHD : growth hormon deficiency
Nb : number

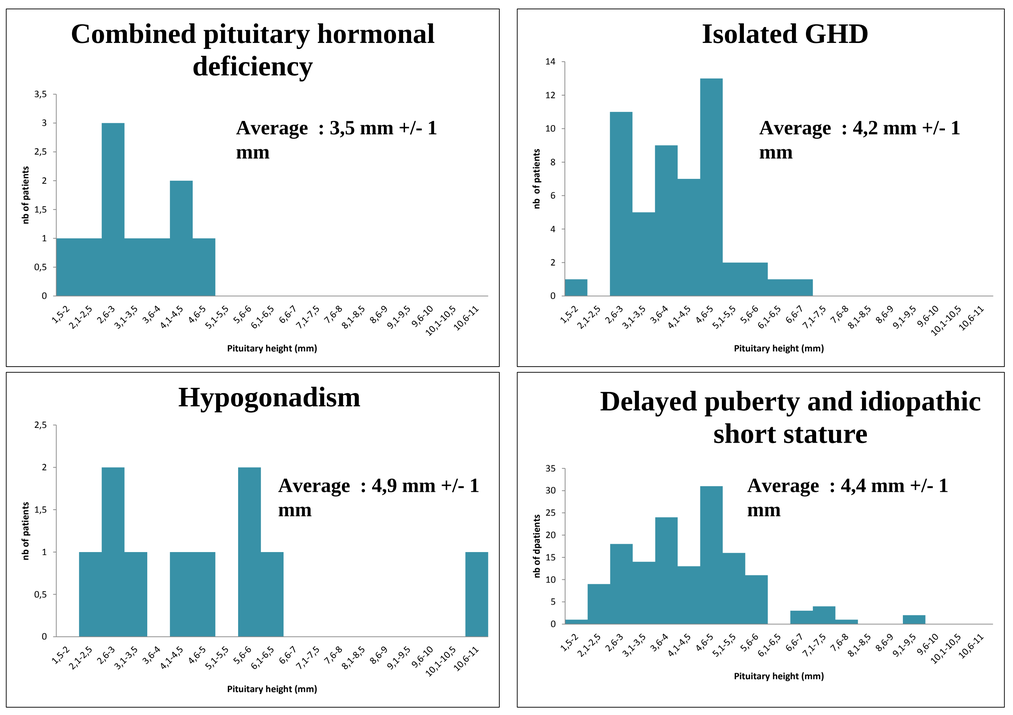
Results of first MRI



MRI results according to endocrine evaluation

	Hypothalamic-pituitary lesion or minor anomaly				Normal	Other lesion
	Ectopic posterior pituitary	Hypothalamic-pituitary lesion +/- other lesion	Hypoplasia of the anterior pituitary +/- other lesion	Total		
Isolated GHD	0	3 (5,8 %)	9 (17,3 %)	12 (23,1 %)	26 (50 %)	14 (26,9 %)
Hypogonadism	0	4 (40 %)	1 (10 %)	5 (50 %)	2 (20 %)	3 (30 %)
Combinated pituitary hormon deficiency	6 (60 %)	1 (10 %)	0	7 (70 %)	1 (10 %)	2 (20 %)
Delayed puberty, idiopatic short stature and other diagnosis	1 (6,8 %)	22 (15 %)	27 (18,4 %)	50 (34 %)	68 (46,3 %)	29 (19,7 %)
Total	7	30	37	74	97	48

Pituitary size according to diagnosis



p = 0,12 : no statistical difference

Conclusion

Brain MRI performed in the context of anterior pituitary hormone deficiency identified a causal lesion in 3.2% but detected incidental unrelated MRI abnormalities in a large proportion of patients, leading to a high number of repeat examinations. Further work should be done to further refine the indications for brain MRI in these patients and avoid unnecessary examinations and the risk of incidental findings.

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