MRI for Growth hormone deficiency

In patients with severe growth hormone deficiency and patients with multiple pituitary hormone deficiencies, MRI is more likely to be abnormal, and bone age is much delayed in patients with a history of prenatal disorders [1)]

MRI is indicated to rule out calcifications, tumors, and structural anomalies. But preliminary data indicate that most brain MRIs performed for routine evaluation of children with isolated growth hormone deficiency (IGHD) are not essential for determining the cause. Further studies with larger cohorts are needed in order to validate this proposed revision of current protocols [2)].

Patients with abnormal MRI findings show a more favorable response to GH replacement therapy [3)].

Pathogenic MRIs were uncommon in patients diagnosed with GHD except in the group with peak GH<3 ng/mL. There was a high frequency of incidental findings which often resulted in referrals to neurosurgery and repeat MRIs. Given the high cost of brain MRIs, their routine use in patients diagnosed with isolated GHD, especially patients with a peak GH of 7-10 ng/mL, should be reconsidered [4)].

Xu et al. verified the advantages of using magnetic resonance imaging (MRI) for improving the diagnostic quality of growth hormone deficiency (GHD) in children with short stature caused by pituitary lesions. Clinical data obtained from 577 GHD patients with short stature caused by pituitary lesions were retrospectively analyzed. There were 354 cases (61.3%) with anterior pituitary dysplasia; 45 cases (7.8%) of pituitary stalk interruption syndrome (PSIS); 15 cases (2.6%) of pituitary hyperplasia due to primary hypothyroidism; 38 cases (6.6%) of Rathke cleft cyst; 68 cases (11.8%) of empty sella syndrome; 16 cases (2.8%) of pituitary invasion from Langerhans cell histiocytosis; 2 cases (0.3%) of sellar regional arachnoid cyst and 39 cases (6.8%) of craniopharyngioma. MRI results showed that the height of anterior pituitary in patients was less than normal. Location, size and signals of posterior pituitary and pituitary stalk were normal in anterior pituitary dysplasia. In all cases pituitary hyperplasia was caused by hypothyroidism. MRI results showed that anterior pituitary was enlarged, and we detected upward apophysis and obvious homogeneous enhancement. There were no pituitary stalk interruption and abnormal signal. We also observed that after hormone replacement therapy the size of pituitary gland was reduced. Anterior pituitary atrophy was observed in Rathke cleft cyst, empty sella syndrome, sellar regional arachnoid cyst and craniopharyngioma. The microstructure of hypophysis and sellar region was studied with MRI. We detected pituitary lesions, and the characteristics of various pituitary diseases of GHD in children with short stature. It was concluded that in children with GHD caused by pituitary lesions, MRI was an excellent method for early diagnosis. This method offers clinical practicability and we believe it can be used for differential diagnosis and to monitor the therapeutic effects [5)].

References

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