Pituitary MR Imaging in Children with Pathologic Short Stature of Central Origin

Arbelaez, A.1,2, Restrepo, F.1, Velasquez, A.1
1Hospital Pablo Tobon Uribe, Medellin, COLOMBIA, 2Instituto Neurologico de Antioquia, Medellin, COLOMBIA.

Purpose
To show pituitary MR findings in children with pathologic short stature of central origin secondary to growth hormone deficiency.

Materials & Methods
We included 19 children with pathologic short stature of central origin due to growth hormone deficiency with pituitary MR imaging performed between July 2000 and September 2001. Inclusion criteria: Short stature < 2.5 SDS, Skeletal age < 2 years in respect to chronological age and growth hormone test (insulin stimulation) < 7 Ng/ml. We excluded children with congenital musculoskeletal syndromes or malformations, metabolic dysfunction, rheumatologic or collagen-related diseases and endocrine disorders nonrelated with growth hormone deficiency.

Results
We divided findings into four categories: normal, pituitary dysfunction, glandular compression, and glandular invasion. We found 7 (36.8%) patients with normal MR imaging. Five (26.3%) with pituitary dysfunction, of these, 2 ectopic posterior lobe, 2 microhypophysis, and 1 pituitary stalk absence. Four children (20.9%) with glandular compression due to 2 craniopharyngiomas, 1 pars intermedia cyst and 1 microadenoma. Three patients (15.7%) with glandular invasion and destruction by 2 eosinophilic granuloma and 1 invasive craniopharyngioma.

Conclusion
Pathologic short stature is defined as tall < 2.5 SDS. Normal tall requires anabolic hormones (growth hormone, insulin, and thyroid) and anatomical and functional integrity. Diagnostic short stature requires growth hormone test by insulin or cortisol stimulation to exclude hormonal or extrahormonal causes. Pathologic short stature of central origin is due to pituitary dysfunction, compressive effect against somatotrophic cells or by invasion and destruction of pituitary gland. Pituitary MR imaging is mandatory in the evaluation of children with pathologic short stature of central origin as it shows the cause of growth hormone deficiency and it defines the appropriate treatment, between medical, surgical, or exogenous growth hormone supplement.