



Commentary on "Pathological brain lesions in girls with central precocious puberty at initial diagnosis in Southern Vietnam"

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Precocious puberty is divided into gonadotropin-dependent and nondependent types, and cases where the hypothalamus-pituitary-gonad axis is activated at an early stage have been described as central precocious puberty (CPP). Precocious puberty occurs 5 to 10 times more frequently in girls than in boys, and abnormalities in the central nervous system (CNS) often accompany this condition in boys.

Brain lesions thought to be organic causes of CPP include hamartoma, glioma, astrocytoma, ependymoma, craniopharyngioma, germinoma of the hypothalamus, hydrocephalus, congenital anomalies, and arachnoid cyst. On the other hand, there are many CNS abnormalities that are not associated with CPP. The prevalence of actual brain tumors or progressive lesions on MRI varies depending on sex, age, and the presence or absence of accompanying symptoms.¹⁾ Incidental detection of benign brain lesions that are not related to the CPP represents approximately 11% of all brain magnetic resonance imaging (MRI) abnormalities.^{2,3)}

Several researchers have reported the prevalence of CNS abnormalities detected on brain MRI in CPP.⁴⁻⁶⁾ Clinical or laboratory factors that can predict abnormal findings on brain MRI in patients diagnosed with CPP have not yet been identified. Some researchers reported that basal luteinizing hormone (LH) and peak LH were statistically significantly increased when CNS abnormalities were present.²⁾ Hamartoma is characterized by a high incidence in children under two years of age and significant basal LH and peak LH in hormone tests. Therefore, a clinician needs to make a judgment in consideration of the age and characteristics of the tumor.³⁾ One more thing to consider, the criteria for pathologic brain lesions vary between studies: caution should be exercised when comparing the prevalence of CNS abnormalities in CPP.

In a meta-analysis of 1,853 girls diagnosed with CPP, the percentage of brain MRI abnormalities was 7% (95% confidence interval [CI], 5%–10%), of which 25% were in patients under 6 years (95% CI 19%–32%), and 3% were in 6- to 8-year-olds (95% CI, 0%–10%). The most common brain MRI abnormality was hamartoma of the hypothalamus, and the prevalence of brain tumors was 1.6% in all age groups. The onset of puberty before age 6 was the critical risk factor, and the prevalence of CNS disorders decreased with increasing age in girls.¹⁾

In a study conducted by Huynh et al.⁷⁾ of Vietnamese girls with CPP, organic CPP was reported to represent 12.5% of cases. Pathological brain findings were detected in 33.3% of girls aged 0–2 years, 15.6% of girls aged 2–6 years, and 3.6% of girls aged 6–8 years. The authors reported a higher prevalence of brain lesions in Vietnamese girls with CPP compared with other relevant studies. Therefore, when deciding whether to perform brain MRI in CPP patients, it is necessary to consider region and race.

Recently, the frequency of idiopathic CPP has also increased in boys,⁸⁻¹⁰⁾ and one report found that 93.2% of boys diagnosed after the age of 8 had no abnormalities in brain MRI.¹¹⁾ However, there is no systematic literature review on the frequency of CNS lesions in boys with CPP. Therefore, the decision to perform brain MRI in patients with CPP should consider neurological abnormalities and signs, cost, and the risks associated with contrast use and

sedation.

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