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Prevalence of Pathological Brain Lesions in Girls with Central Precocious Puberty: Possible Overestimation?

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ABSTRACT

Background: Brain magnetic resonance imaging (MRI) is routinely performed to identify brain lesions in girls with central precocious puberty (CPP). We aimed to investigate the prevalence and type of brain lesions among Korean girls with CPP and evaluate the need for routine brain MRI examinations.

Methods: This retrospective cross-sectional study evaluated data on 3,528 girls diagnosed with CPP from April 2003 to December 2016, and identified 317 girls who underwent sellar MRI. Exclusion criteria were patients with a known brain tumor or who did not undergo brain MRI due to refusal or the decision of the pediatric endocrinologist.

Results: Normal sellar MRI findings were observed in 291 of the 317 girls (91.8%). Incidental findings were observed in 26 girls (8.2%). None of the patients had pathological brain lesions.

Conclusion: The prevalence of intracranial lesions among girls who were generally healthy and without neurological symptoms but diagnosed with CPP was lower than that previously reported. Furthermore, none of the identified lesions required treatment. It may be prudent to reconsider the routine use of brain MRI to screen all patients with CPP, especially if they are healthy and neurologically asymptomatic, and are girls aged 6–8 years.

Keywords: Girl; Precocious Puberty; Brain; Magnetic Resonance Imaging; Prevalence; Brain Neoplasm

INTRODUCTION

Central precocious puberty (CPP) is the onset of secondary sexual characteristics before age 8 years for girls and age 9 years for boys, and is caused by the early activation of the hypothalamic-pituitary-gonadal axis.¹ Although approximately 90% of girls have idiopathic CPP, approximately 40%–75% of boys with CPP have a pathological brain lesion.^{1,2} Therefore, brain magnetic resonance imaging (MRI) may be used to screen children with CPP to exclude the possibility of a pathological brain lesion. Numerous studies have evaluated the prevalence and types of intracranial lesions in CPP cases, as well as their clinical and biochemical predictors. However, there is controversy regarding the necessity of MRI, and there are no

