

Relationship between final adult height and birth weight after gonadotropin-releasing hormone agonist treatment in girls with central precocious puberty

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BACKGROUND : In central precocious puberty (CPP), increased gonadal hormonal secretion promotes bone maturation, which leads to early epiphyseal fusion and a shorter final adult height (FAH). The clinical significance of birth weight relative to FAH in girls with central precocious puberty is unclear.

METHODS: This retrospective study reviewed data of 69 girls with precocious puberty who had reached their FAH in a long-term trial of GnRHa treatment between January 2007 and December 2017. The subjects were divided into **small for gestational age (SGA) (n=19)** and **appropriate for gestational age (AGA) (n=50) groups**. BA was measured using the Greulich-Pyle method on plain radiographs of the left hand and wrist and Bayley-Pinneau (BP) average tables were used to measure predicted adult height (PAH).

ACADEMIC P.E.A.R.L.S

Pediatric Evidence And Research Learning Snippet



Final height in SGA and AGA girls with Central precocious puberty on GnRH treatment

MAIN OUTCOMES AND MEASURES: Chronological age (CA), bone age (BA), height, body weight, body mass index (BMI), standard deviation scores (SDS) for height, body weight, and BMI relative to CA; peak LH/follicle-stimulating hormone (FSH) ratio at the start of treatment, basal LH/FSH ratio at 6 months after treatment and at end of treatment. Final adult height (FAH) was measured when patients achieved a BA of 15 years or when the growth rate was less than 1 cm/yr. The time between the end of GnRHa treatment and menarche was also confirmed.

RESULTS:

- When starting GnRHa treatment, bone age was 10.9 ± 0.9 and 10.3 ± 0.8 years in the SGA and AGA groups, respectively ($P < 0.05$).
- The predicted adult height (PAH) (established according to the Bayley-Pinneau average table) and advanced PAH (established according to the Bayley-Pinneau advanced table) were 151.5 ± 4.8 cm and 155.8 ± 4.9 cm in the SGA group, respectively, and 153.4 ± 5.3 cm and 159.0 ± 6.0 cm in the AGA group.
- After treatment, no significant difference in bone age was found between the groups. The time to menarche after treatment was 12.5 ± 7.6 and 21.1 ± 12.3 months in the SGA and AGA groups, respectively ($P < 0.05$).
- FAH in the SGA and AGA groups was 161.0 ± 4.7 cm and 161.6 ± 5.0 cm, respectively, without a significant difference and was close to the predicted adult height.

DISCUSSION

This study investigated the effects of GnRHa treatment in SGA and AGA girls with central precocious puberty. Although bone age was advanced significantly in SGA girls compared to AGA girls at diagnosis, on follow up the bone age advancement was similar in both the groups. The final adult height achieved was also similar in both groups. This suggests that GnRHa is effective in increasing the FAH equally in both AGA and SGA children.

EXPERT COMMENT

“Gn RH analogues (GnRHa) used for treating central precocious puberty is equally effective in both SGA and AGA children in terms of suppressing the bone age and achieving final adult height.”

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With warm regards,

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Reference

Reference : Cho AY, Ko SY, Lee JH, Kim EY.
Relationship between final adult height and birth weight after gonadotropin-releasing hormone agonist treatment in girls with central precocious puberty. *Ann Pediatr Endocrinol Metab.* 2020 Mar;25(1):24-30. doi: 10.6065/apem.2020.25.1.24.