

A Common Cause of Short Stature Especially in Boys: Constitutional Delay of Growth and Puberty

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Abstract

Constitutional delay of growth and puberty (CDGP) is a common cause of short stature during the peripubertal years which is mostly seen in boys. Puberty begins between age 8 - 13 in girls and 9 - 14 years in boys. The child with a late commencement of puberty becomes shorter than their peers at those ages because of the lack of sexual steroid effect on growth. CDGP is mostly idiopathic with familial tendency and they usually enter puberty late with late catch up growth. In some cases therapy is needed because late catch up growth could not be sufficient to reach their predicted heights.

Keywords: *Constitutional Delay of Growth and Puberty (CDGP); Short Stature*

Constitutional delay of growth and puberty (CDGP) is defined as no pubertal signs till age 13 in girls and till age 14 in boys. It is accompanied by growth retardation or slow growth rate (less than 5 cm/year) and bone age delay. Igf1 (insulin like growth factor 1) secretion is low in these children, too [1-3].

CDGP is usually idiopathic and mostly seen in boys. Short stature and delay in sexual maturation can cause psychological problems in these children. Besides that if untreated, low final height, decrease in bone mineralization and fertility problems makes CDGP an important health issue. Most experts treat CDGP at the age of 13 in boys and 14 in girls.

Familial tendency is present in CDGP and seen 2 times more in boys than girls. At the time of diagnosis low height and weight values (3 or 10 percentile) and low sitting height values are present. Time between the beginning of puberty and peak height velocity becomes closer to each other meaning that peak height velocity is less than normal pubertal children. Final height is usually below target height and below -1.85 SD. CDGP is seen about 40% of familial short stature cases [1,4-6].

Etiology

1. Idiopathic
2. Hypogonadotropic Hypogonadism
 - Kalmann syndrome.
 - Acquired.
 - Head trauma, infections.
 - Endocrinopathies (Diabetes Mellitus, hypothyroidi, growth hormone deficiency, hyperprolactinemia).
3. Hypergonadotropic Hypogonadism
 - Genetic (Turner syndrome, Klinefelter syndrome).
 - Acquired (otoimmün infections, kemoterapy).

Bone age is usually less than 2 years than chronological age in CDGP. Differential diagnosis with hypogonadotrophic hypogonadism is difficult and needs long follow up, but still there could be some endocrinological tests to be used like GnRH test [7-9].

The other method for differential diagnosis is to give testosterone for 3 - 4 months and wait for enlargement of testis. If so and if there is increment of sex steroids in blood stop treatment and wait for other 3 - 4 months. If testicular development continues, it is CDGP if not another cure of treatment could be given and wait for results. If the patient is hypogonadotrophic hypogonadism continuous testosterone therapy should be given lifelong.

Some key points for CDGP treatment:

- In most cases spontaneous puberty begins but is late like 2 - 3 years.
- Most boys cannot reach their predicted adult heights.
- In most cases CDGP and familial short stature is seen together.
- Decrease in bone mineralization and bone mass can be seen.
- Decrease in self trust, social isolation and decrease in academic success can be seen in untreated CDGP cases [1,10-12].

The choice of treatment is to give testosterone esters usually monthly.

Bibliography

1. Soliman AT and deSanctis V. "An approach to constitutional delay of growth and Puberty". *Indian Journal of Endocrinology and Metabolism* 16.5 (2012): 698-705.
2. Tarım Ö. "Gecikmiş Puberte". *Türkiye Klinikleri* 9.2 (2013): 31-36.
3. Poyrazoğlu S., et al. "Constitutional delay of growth and puberty". *Journal of Pediatric Endocrinology and Metabolism* 18.2 (2005): 171-179.
4. Kaplowitz PB. "Diagnostic value of testosterone therapy in boys with delayed puberty". *American Journal of Diseases of Children* 143.1 (1989): 1001-1002.
5. Brook CGD. "Treatment of late puberty". *Hormone Research* 51.3 (1999): 101-103.
6. Albanese A and Stanhope R. "Predictive factors in the determination of final height in boys with CDGP". *Journal of Pediatrics* 126.4 (1995): 545-550.
7. Crowne EC., et al. "Final height in boys with untreated CDGP". *Archives of Disease in Childhood* 65.10 (1990): 1109-1112.
8. Albanese A and Stanhope R. "Does CDGP cause segmental disproportion and short stature?" *European Journal of Pediatrics* 152.4 (1993): 293-296.
9. Malhotra A., et al. "The effects of oxandrolone on growth hormone and gonadal axes in boys with CDGP". *Clinical Endocrinology* 38.4 (1993): 393-397.
10. Jarow JP and Zirkin BR. "The androgen microenvironment of the human testis and hormonal control of spermatogenesis in man". *Annals of the New York Academy of Sciences* 1061 (2005): 208-220.

11. Gordon D., *et al.* "An evaluation of hCG therapy in boys with CDGP". *QJM: An International Journal of Medicine* 74.275 (1990): 247-256.
12. Martin MM and Martin AL. "Constitutional Delayed Puberty in Males and Hypogonadotropic Hypogonadism: A Reliable and Cost Effective Approach to Differential Diagnosis". *Journal of Pediatric Endocrinology and Metabolism* 18.9 (2005): 909-916.

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