Central Precocious Puberty

Central Precocious puberty (CPP) is characterized by early pubertal changes, acceleration of growth velocity, and rapid bone maturation that often result in reduced adult height. An onset of pubertal signs before the age of 8 years in girls and 9 years in boys should always be evaluated. A combination of clinical signs, bone age, pelvic echography in girls, and hormonal data are required to diagnose CPP and make a judgment concerning progression and prognosis. Not all children with apparently true CPP require medical intervention. The main reasons for treatment are to prevent compromised adult height and to avoid psychosocial or behavioral problems. The need for treatment for auxologic reasons is based on estimation of predicted adult height, with the finding of a reduced height potential, which may require a follow-up. Indication for treatment on the basis of psychologic and behavioral anomalies has to be determined on an individual basis. The main short-term aims of therapy are to stop the progression of secondary sex characteristics and menses (in girls) and to treat the underlying cause, when known. Long-term goals are to increase final adult height and to promote psychosocial well-being. Once it has been decided that treatment is appropriate, it should be initiated immediately with depot gonadotropin-releasing hormone (GnRH) agonists. The effective suppression of pituitary gonadal function is achieved with these compounds in practically all CPP patients. Long-term data are now available from 2 decades of GnRH agonist treatment for patients with CPP.

Treatment preserves height potential in the majority of patients (especially in younger patients) and improves the final adult height of children with rapidly progressing CPP, with a complete recovery of the hypothalamic-pituitary-gonadal axis after treatment. GnRH agonist treatment using depot preparations is useful and has a good safety profile, with minimal adverse effects and no severe long-term consequences. Although further data are need, there may be a role in the future for combining somatropin (growth hormone) and GnRH agonist treatment for some patients with significantly impaired growth velocity. The introduction of GnRH antagonists is likely to improve the treatment options for CPP [1)]

Severe traumatic brain injury in childhood can lead to permanent pituitary dysfunction; Growth hormone deficiency and Central precocious puberty may appear after many years. Dassa et al., recommended systematic hormonal assessment in children one-year after severe traumatic brain injury and a prolonged monitoring of growth and pubertal maturation. Recommendations should be elaborated for the families and treating physicians [2)].

1)
Antoniazzi F, Zamboni G. Central precocious puberty: current treatment options. Paediatr Drugs. 2004;6(4):211-31. Review. PubMed PMID: 15339200.
2)
Dassa Y, Crosnier H, Chevignard M, Viaud M, Personnier C, Fletchner I, Meyer P, Puget S, Boddaert N, Breton S, Polak M. Pituitary deficiency and precocious puberty after childhood severe traumatic brain injury: a long-term follow-up prospective study. Eur J Endocrinol. 2019 Mar 1. pii: EJE-19-0034.R1. doi: 10.1530/EJE-19-0034. [Epub ahead of print] PubMed PMID: 30884465.