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CENTRAL PRECOCIOUS PUBERTY: EVALUATION OF PREDICTED AND FINAL ADULT HEIGHT IN GIRLS WHO RECEIVED GNRH ANALOGS

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INTRODUCTION

Central precocious puberty (CPP) is defined as the early occurrence of puberty before the age of 8 years in girls and 9 years in boys. CPP has many implications for the patient's physical, emotional, and psychological aspects. The most sought-after benefit of the treatment is the preservation of the growth potential of final adult height. This study aims to evaluate the predicted and final adult height in girls with CPP who received treatment in the University Malaya Medical Centre (UMMC), Malaysia.

METHODOLOGY

In this retrospective longitudinal study, 32 CPP patients who received treatment with GnRH analogs in UMMC between 2010 and 2025 were identified. The demographic and clinical data of the patients were retrieved from the medical record system and analyzed.

RESULTS

The study revealed that predicted adult height (PAH) by using bone age closely approximated the actual final adult height (FAH) with no significant difference observed ($p = 0.793$), and a strong positive correlation ($r = 0.75, p < 0.001$). The predicted height based on the genetic potential of mid-parental target height (MPTH) showed a significant underestimation of FAH (mean difference = -1.89 cm, $p < 0.01$), although it remained a robust predictor ($r = 0.75, p < 0.01$). Across age groups, the correlation between PAH and FAH was strongest in girls aged 6–8 years old. Notably, girls treated before age 6 exhibited a significant height gain compared to initial prediction values, underscoring the importance of early intervention.

CONCLUSION

From this study, we concluded that the FAH outcome in girls with CPP who received treatment with GnRH analogs is preserved, similar to the PAH calculated by bone age. However, the FAH is significantly lower than the MPTH (genetic potential). The baseline height SDS appears to be a strong predictor of FAH. The bone age value is the strongest predictor of FAH. The preservation of adult height potential is more prominent when subjects developed CPP before 6 years and were treated immediately.