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Growth, pubertal development and skeletal maturation in children with type 1 diabetes mellitus

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ABSTRACT

Objective: To study growth, pubertal development and skeletal maturation in children with type 1 diabetes mellitus (T1DM).

Study Design: This was a longitudinal observation study.

Methods: Anthropometric data and pubertal status of 56 children with T1DM was collected. Height was re-measured at one year to assess height velocity. An x-ray of left hand was taken for assessment of skeletal maturation. Glycated haemoglobin and thyroid stimulating hormone were measured in all the patients.

Results: Short stature was seen in 27% (n=15) of the patients. Ht SDS was found to correlate negatively with the duration of T1DM (r= -0.347, p= 0.009). Forty percent of the 25 patients (n=10) followed up over one year had impaired height velocity [Height velocity Standard Deviation Score (HVSDS) < -2]. A negative correlation was seen between age of onset of T1DM (r= -0.474, p=0.017) and glycated haemoglobin (r= -0.708, p=<0.001) with the HV SDS. Pubertal development and age at menarche was normal in girls while 3 boys had delayed progression of puberty. A bone age delay of one year or more was seen in 48% (n=18) of the 37 patients assessed for skeletal maturation. A negative correlation was seen between the difference of chronological age and bone age and body mass index standard deviation score (r=-0.484, p=0.002).

Conclusion: Chronic poor glycemic control causes impaired growth in patients with T1DM. Children with peripubertal onset of T1DM have lower height velocity. Pubertal development is normal in girls; however it may be delayed in boys. Further, T1DM causes delayed skeletal maturation.

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