Dental Maturity and Chronological age in a sample of Growth Hormone Deficient patients aged 4 - 16 years

[Comparative Study]

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ABSTRACT

In the field of orthodontics, the age has a prime interest for estimating the dental and general developmental status of the patient. However, since the Chronological Age was many times regarded as a poor maturity indicator, it is the biological (dental) age rather than the calendar age that determines the timing options and ideal planning of orthodontic treatment.

The present study aimed to explore the direct effect of Growth Hormone Deficiency on the rate of dental system development that might indirectly affect the traditional orthodontic treatment timing standards. On the other hand, the magnitude of any possible differential effect of this endocrinopathy on the Dental (Dental Age) and Somatic (Height Age) systems has been taken into consideration in this study.

The sample of this research includes a Study group of 87 patients sufferings of short stature due to Isolated Growth Hormone Deficiency (51 males and 36 females) aged 4 – 16 years with a comparable Control group of normally growing subjects which as matches as possible the Study group in size, mean Chronological Age, and gender distribution.

The Dental Age has been assessed using the method of *Demirjian et al* (*1973*) that revised in *1976* by *Demirjian* and *Goldstein*, using the panoramic radiograph to assess the developmental stages of the seven left mandibular permanent teeth (except the wisdom tooth).

The study results declares a highly significant delay in Dental development of the Isolated Growth Hormone Deficient patients when compared to the Control group normally growing subjects, with a total mean difference of about 1.5 years that maximizes at the third age group (9 – 12 years) to reach about 1.8 years. The dental maturation of both Study males and females was affected in a relatively similar manner. Meanwhile, the differential effect was clearly noticed in the effect of Growth Hormone Deficiency on the Height Age and Dental Age with the greater retardation imposed on the general body growth (Height Age) compared to the dental development (Dental Age).

It has been concluded that the differential effect of Growth Hormone Deficiency on the Somatic and Dental systems may be attributed to the different embryologic origin.