Positive effects of growth hormone treatment on craniofacial morphology in Tuner syndrome patients

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Turner syndrome occurs in phenotypic females with complete or partial absence of X-chromosome. The leading symptom is short stature, while numerous but mild stigmata manifest in the craniofacial region. Turner syndrome patients are commonly treated with growth hormone to improve their final height. The aim of this study was to investigate the influence of long-term growth hormone treatment on craniofacial morphology in patients with Turner syndrome. Cephalometric analysis was performed on 13 lateral cephalograms of patients with 45,X karyotype and the average age of 17.3 years. In all patients growth hormone has been administrated for at least two years. The control group consisted of 13 cephalograms of Turner syndrome patients naïve to growth hormone treatment, matched to study group by age and karyotype. Standard deviation scores were calculated to evaluate the level of growth hormone influence. In patients receiving growth hormone most of linear measurements were significantly larger compared to control group. Growth hormone therapy mostly influenced posterior face height, mandibular ramus height, total mandibular length, anterior face height and maxillary length. All these values were more than two standard deviations larger compared to controls. Cranial base was significantly elongated only in the anterior part. While the increase in linear measurements was evident, angular measurements and facial height ratio did not show statistically significant difference. Results of this study suggest that long-term growth hormone therapy has positive influence on growth and development of craniofacial complex in Turner syndrome patients, with the greatest impact on posterior facial height and mandibular ramus.

Keywords: Turner syndrome; craniofacial morphology; growth hormone; X-chromosome