Chronologic age and skeletal maturation of the cervical vertebrae and hand-wrist: Is there a relationship?

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Introduction: The aims of this study were (1) to investigate the relationship between chronologic age and maturation of cervical vertebrae, (2) to identify the relationship between chronologic age and maturation stage evaluated by hand-wrist radiographs, and (3) to determine whether the maturation of cervical vertebrae correlates with maturation indicated by hand-wrist radiographs in a Turkish population. Methods: The samples were derived from lateral cephalometric and hand-wrist radiographs of 503 subjects (213 male, 290 female; ages, 5.3-24.1 years). Cervical vertebral development was evaluated by the method of Hassel and Farman. Skeletal maturation of each hand-wrist radiograph was determined according to the method described by Björk and Grave, and Brown's system. The Spearman rank-order correlation coefficients were estimated separately for males and females to measure the relationships among chronologic age, cervical vertebral maturation, and the skeletal maturation measured at the hand-wrist. Results: The Spearman correlation coefficients were 0.72 ($P < .001$) between chronologic age and cervical vertebrae skeletal maturation, and 0.79 ($P < .001$) between chronologic age and maturation via hand-wrist radiographs. The correlation coefficient between hand-wrist and cervical-vertebrae maturation was 0.86 ($P < .001$). Conclusions: The cervical-vertebrae maturation stages are clinically useful maturity indicators of the pubertal growth period Turkish subjects. (Am J Orthod Dentofacial Orthop 2006;130:622-8)