Age Estimation from Teeth among North Indian Population: Comparison and Reliability of Qualitative and Quantitative Methods

Authors : Jasbir Arora, Indu Talwar, Daisy Sahni, Vidya Rattan

Abstract : Introduction: Age estimation is a crucial step to build the identity of a person, both in case of deceased and alive. In adults, age can be estimated on the basis of six regressive (Attrition, Secondary dentine, Dentine transparency, Root resorption, Cementum apposition and Periodontal Disease) changes in teeth qualitatively using scoring system and quantitatively by micrometric method. The present research was designed to establish the reliability of qualitative (method 1) and quantitative (method 2) of age estimation among North Indians and to compare the efficacy of these two methods. Method: 250 single-rooted extracted teeth (18-75 yrs.) were collected from Department of Oral Health Sciences, PGIMER, Chandigarh. Before extraction, periodontal score of each tooth was noted. Labiolingual sections were prepared and examined under light microscope for regressive changes. Each parameter was scored using Gustafson's 0-3 point score system (qualitative), and total score was calculated. For quantitative method, each regressive change was measured quantitatively in form of 18 micrometric parameters under microscope with the help of measuring eyepiece. Age was estimated using linear and multiple regression analysis in Gustafson's method and Kedici's method respectively. Estimated age was compared with actual age on the basis of absolute mean error. Results: In pooled data, by Gustafson's method, significant correlation ($r = 0.8$) was observed between total score and actual age. Total score generated an absolute mean error of ± 7.8 years. Whereas, for Kedici's method, a value of correlation coefficient of $r=0.5$ ($p<0.01$) was observed between all the eighteen micrometric parameters and known age. Using multiple regression equation, age was estimated, and an absolute mean error of age was found to be ± 12.18 years. Conclusion: Gustafson's (qualitative) method was found to be a better predictor for age estimation among North Indians.

Keywords : forensic odontology, age estimation, North India, teeth