

Dental age estimation and third molars: a preliminary study

K. Mesotten (a), K. Gunst (a), A. Carbonez (b), G. Willems (a,b,c),*

(a) Department of Orthodontics, Faculty of Medicine, School of Dentistry, Oral Pathology and Maxillo-Facial Surgery, Katholieke Universiteit Leuven, Kapucijnenvoer 7, B-3000 Leuven, Belgium

(b) University Centre for Statistics, Katholieke Universiteit Leuven, Croylaan 52B, B-3000 Leuven, Belgium

(c) Centre of Forensic Dentistry, Katholieke Universiteit Leuven, Kapucijnenvoer 7, B-3000 Leuven, Belgium

Forensic Science International 129 (2002) 110–115

Abstract

The aim of the present investigation was to reconstruct the chronological age based on the dental developmental stages of third molars evaluated on orthopantomograms. A total of 1175 orthopantomograms were assembled from patients of Caucasian origin between 16 and 22 years of age. Each third molar present was scored by two observers according to a 10-stage developmental scale. The k statistics measured the intra- and inter-observer reliability. The general statistical analysis was based on multiple regression analysis in order to obtain multiple regression formulas for dental age estimation based on the number of third molars present on the evaluated orthopantomogram. No regression models were statistically significant when there was only one-third molar present because of the relatively small number of orthopantomograms that fitted this criterion. A strong agreement was found between the intra- and inter-observer measurements. The statistical analysis revealed both for males and females high Pearson correlation coefficients between contralateral third molars and smaller coefficients between antimeres. The obtained multiple regression formulas are only applicable in certain specified conditions, for instance when four third molars are present the following formulas should be used in a Caucasian male “age $\frac{1}{4}$ 10:2000 \pm 0:5122UL \pm 0:5273LL” (developmental stage of upper and lower left third molars) or in case of a female “age $\frac{1}{4}$ 13:6206 \pm 0:1933UR \pm 0:5080LR” (developmental stage of upper and lower right third molars). This investigation revealed that the chronological age of a Caucasian individual may be estimated based on regression formulas with a S.D. of 1.52 or 1.56 years for males and females, respectively, when all four third molars are present.

Keywords: Forensic science; Forensic odontology; Dental age estimation; Third molar

Por problemas con el copyright de la editorial, se aporta sólo el resumen del artículo disponible vía MedLine. El mismo se halla disponible, entre otros, en el archivo de la biblioteca del INTCF de Madrid y en la biblioteca del IVML. La página web de la revista JOFS no dispone del artículo en formato digital. Dado el gran interés del artículo, en caso de desear consultarlo, puede ser solicitado en ambas bibliotecas (INTCF: Dra. Concha Vallejo; IVML: D. Imanol Garamendi, garamendi.pm@aju.ej.gv.es)