Correlation between numbers of cells in human dental pulp and age: Implications for age estimation

Objective

The aim of this study was to investigate correlations between dental pulp cell count of odontoblasts, subodontoblasts and fibroblasts and age, within different age groups. Formulation of regression equations using the dental pulp cell count for predicting age was attempted.

Design
Eighty-one extracted teeth were grouped into two age groups (6–25 years, 26–80 years). The teeth were demineralized and histological sections were prepared for cell count. Regression equations were generated from regression analysis of cell count and tested for age estimation.

Results

The number of dental pulp cells were found to increase until around the third decade of life and following this, the odontoblasts and subodontoblasts cell numbers began to decline while the fibroblasts seemed to remain almost stationary. The Pearson correlation test revealed a significant positive correlation between the cell number for all type of cells and age in the 6–25 years group (r = +0.791 for odontoblasts, r = +0.600 for subodontoblasts and r = +0.680 for fibroblasts). In the 26–80 years age group, a significant negative correlation of the odontoblasts (r = −0.777) and subodontoblasts (r = −0.715) with age was observed but for fibroblasts, the correlation value was negligible (r = −0.165). Regression equations generated using odontoblasts and subodontoblasts cell number were applicable for age estimation. The standard error of estimates (SEEs) were around ±5 years for 6–25 years and ±8 years for 26–80 years age groups. The mean values of the estimated and chronological ages were not significantly different.

Conclusions

A significant correlation between the cell count of odontoblasts and subodontoblasts with age was demonstrated. Regression equations using odontoblasts and subodontoblasts cell number can be used to predict age with some limitations.

Keywords
Dental pulp
Aging
Odontoblasts
Subodontoblasts
Fibroblasts