

## Does orthodontic treatment induces dental pulp cellular death? Caspase-3 and-9, HSP60 and Tunel expression

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*Objective.* To evaluate the hypothesis of human dental pulp cell death during Orthodontic Treatment (O.T.) and the degree of apoptosis through the expression level of the proteins Caspase-3,-9, TUNEL and HSP60.

*Materials and methods.* Human dental Pulp were coming from both male and female patients (N=20; age 10-14years). The technique used was the Straight Wire, which involves Nickel-Titanium or Steel archwires. The increase of pressure applied on teeth was gradual. Some patients were subjected to a premolar extraction after 3 months treatment, and others after 6 months. Samples were Bouin-fixed, paraffin-embedded and afterwards processed for immunohistochemistry using anti-caspase-3,-9 antibody, anti-HSP60 and TUNEL.

*Results.* Increasing of Caspase-3,-9 expression occurred in 3 and 6 months O.T. samples, while in control pulps positivity was detected mainly at odontoblasts level.

HSP60 was not expressed in control samples and very weak in 3 months O.T. samples, it was expressed instead in 6 months O.T. samples, the expression of TUNEL is evident in all samples but increased at 3 and 6 months specimen.

*Conclusion.* Our hypothesis is supported by the increasing expression of Caspase-3,-9, HSP60 and TUNEL after 3 and 6 months of orthodontic traction revealing a time-dependent relationship.

Keywords: Caspase-9, orthodontic treatment, Dental Pulp