

Caspase-9 and Beta-endorphin expression in human dental pulp subjected to orthodontic traction

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Objective Many authors have studied the expression and the changes of some neurotransmitters, enzymes and markers in dental pulp following orthodontic treatment. Our purpose was to evaluate the presence and role of the enzyme Caspase-9 and the neurotransmitter β -Endorphin in human dental pulp samples subjected to orthodontic treatment and Human dental pulp which have been not treated orthodontically. Samples were taken from patients at Winchmore Hill Dental Practice.

Materials and methods Evaluated Human dental Pulp were from both male and female patients between 10 and 14 years old. A Straight Wire technique was used with Nickel-Titanium and Steel Archwires. The increased 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.

Results Caspase-9 stained heavily in the Parenchymal cells and Odontoblasts in the control, 3 and 6 month samples. Endorphin stained heavily in the Subodontoblastic area (containing the nerve plexus) in the 3 month samples, however was weakly stained in the control and 6 months samples.

Conclusion The purpose of this study is to determine whether the expression of Caspase 9 and Beta-endorphin changes during orthodontic treatment. Our results show a variation of reactivity of Endorphin and no difference concerning the Caspase-9. These peptides are known to be involved respectively in cell death, protein degradation and reaction to stresses, thus it is believable that they could play a crucial role in remodelling of tissue necessary for orthodontic tooth movement. Further investigation are needed to prove the effective role of the molecules studied.

Key words

Caspase, Endorphin, Dental Pulp