Effect of orthodontic tooth movement on salivary aspartate aminotransferase activity

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Abstrak

Efek pergerakan gigi pada perawatan ortodonti pada aktivitas aspartat aminotransferase saliva. Aspartat aminotransferase merupakan salah satu indikator biologis yang dilepaskan ke dalam cairan celah gusi. Aplikasi gaya ortodonti pada gigi dapat meningkatkan aktivitas aspartat aminotransferase dalam cairan celah gusi. namun peningkatan aktivitas aspartat aminotransferase dalam cairan saliva akibat gaya ortodonti belum diketahui. Tujuan: (1) mengevaluasi durasi pemberian gaya ortodonti terhadap aktivitas aspartat aminotransferase di dalam saliva berdasarkan durasi pemberian gaya. (2) mengevaluasi korelasi jarak pergerakan gigi dengan aktivitas aspartat aminotransferase. Metode: Pengumpulan 20 sampel saliva subjek dilakukan sebelum pencabutan gigi premolar pertama, sebelum dan sesudah pemberian gaya untuk penarikan kaninus ke distal. Penarikan kaninus menggunakan gaya interrupted (module chain) sebesar 100g selama 30 hari. Pengambilan saliva dan pengukuran jarak pergerakan gigi kaninus dilakukan 1 hari, 7 hari, 14 hari, 21 hari, dan 28 hari setelah pemberian gaya. Pengukuran aktivitas aspartat aminotransferase dalam saliva menggunakan alat spektrofotometer. Hasil: hasil penelitian menunjukkan pemberian gaya ortodonti dapat mempengaruhi aktivitas aspartat aminotransferase dalam saliva (F=25,290, p=0,000). Jarak pergerakan gigi berkorelasi dengan aktivitas aspartat aminotransferase (F=0,429, p=0,000). Simpulan: Aktivitas aspartat aminotransferase dapat digunakan sebagai indikator jarak pergerakan gigi berdasarkan durasi pemberian gaya.
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Aspartate aminotransferase is one of biological indicator in gingival crevicular fluid (CFG). Force orthodontic application could increase activity of aspartate aminotransferase in CFG. However, the increase activity of aspartate aminotransferase in saliva due to orthodontic force and its correlation between aspartate aminotransferase activity and tooth movement remains unclear. Objectives: To evaluate application orthodontic force on the aspartate aminotransferase activity in saliva based on the duration of force and finding correlation between tooth movement and aspartate aminotransferase activity. Methods: Twenty saliva samples collected before extraction of first premolar, at the time of force application for canine retraction and after force application. The canines retraction used 100grams of interrupted force (module chain) for thirty days. The collection of saliva and the measurement of tooth movement were carried out 1 day, 7 days, 14 days, 21 days, and 28 days after force application. The measurement of aspartate aminotransferase activity in saliva was done using spectrophotometer. Results: Application of orthodontic force influences the salivary aspartate aminotransferase activity (F=25.290, p=0.000). Furthermore, tooth movement correlated with aspartate aminotransferase activity (F=0.429, p=0.000). Conclusion: Aspartate aminotransferase activity could be used as tooth movement indicator that related to the duration of force application.