

CHAPTER 6

CONCLUSIONS

This study monitored CS (WF6 epitope) levels in human GCF from the distal sulcus of mandibular canines undergoing orthodontic retraction by either continuous or interrupted orthodontic force patterns. The ELISA with monoclonal antibody WF6 was used to quantify CS levels. Fifteen patients with Class I malocclusion requiring orthodontic treatment with four premolar extractions and distal canine movement were included in this study.

1. No significant difference was found among the medians of CS (WF6 epitope) levels for the eight weeks of the unloaded period and the baseline data (collected at the beginning of the 1st week during the loaded period) by either the continuous or the interrupted orthodontic force pattern. For the continuous force pattern, the medians of CS (WF6 epitope) levels from the 1st to the 8th weeks during unloaded period and baseline data during loaded period were 0.61, 0.47, 0.42, 0.53, 0.46, 0.60, 0.53, 0.42 and 0.37 ng/ μ g of total protein content, respectively. For the interrupted force pattern, the medians of CS (WF6 epitope) levels from the 1st to the 8th weeks during the unloaded period and baseline data during the loaded period were 0.90, 0.49, 0.66, 0.70, 0.75, 0.87, 0.77, 0.84 and 0.21 ng/ μ g of total protein content, respectively.

2. The median CS (WF6 epitope) level resulting from a continuous orthodontic force pattern during the loaded period (0.66 ng/ μ g of total protein content) was significantly

greater than that at the beginning of the loaded period (0.37 ng/ μ g of total protein content; baseline data from a continuous orthodontic force pattern).

3. The median CS (WF6 epitope) level resulting from an interrupted orthodontic force pattern during the loaded period (0.57 ng/ μ g of total protein content) was significantly greater than that at the beginning of the loaded period (0.21 ng/ μ g of total protein content; baseline data from an interrupted orthodontic force pattern).

4. During the loaded period, for the continuous force pattern, the medians of CS (WF6 epitope) levels between the baseline data and each week of experimental data were not significantly different. The medians of CS (WF6 epitope) levels from baseline data to the 8th week of loaded period were 0.37, 0.67, 1.43, 0.51, 0.35, 0.23, 1.40, 0.64, 0.63, ng/ μ g of total protein content, respectively.

5. During the loaded period, for the interrupted force pattern, the medians of CS (WF6 epitope) levels at the end of the 2nd and 5th weeks (1.13 and 2.60 ng/ μ g of total protein content, respectively) were significantly greater than that of the baseline data ($P = 0.031$; $P = 0.041$). However, comparing the medians of CS (WF6 epitope) levels of all remaining pairs demonstrated statistically insignificant differences. The medians of CS (WF6 epitope) levels from baseline data to the 8th week of the loaded period were 0.21, 2.21, 1.13, 0.17, 0.23, 2.60, 0.31, 0.48, 0.16 ng/ μ g of total protein content, respectively.

6. During the loaded period, the medians of CS (WF6 epitope) levels between interrupted and continuous forces at each treatment time were not significantly different.

7. The rate of mandibular canine movement was calculated from the initial study models and the progressive models at the end of the 12th week during the loaded period. Comparison of median rates between experimental teeth moved by the two force patterns

showed a statistically insignificant difference. The mean rate of mandibular canine movement by the continuous force pattern was 0.86 ± 0.37 mm/month, and that by the interrupted force pattern was 0.70 ± 0.55 mm/month.

8. Patients' pain and discomfort during orthodontic mandibular canine movement was evaluated by visual analog score (VAS), with a scale of 0 to 10, at the end of the 1st and the 5th weeks during the loaded period. Comparison of mean VAS score at those two weeks demonstrated statistically insignificant differences. At the end of the 1st week, mean VAS scores of patients' pain and discomfort from the continuous and the interrupted force patterns were 4.89 ± 2.15 and 5.33 ± 2.74 , respectively. At the end of the 5th week, mean VAS scores of patients' pain and discomfort from the continuous and the interrupted force patterns were 5.11 ± 1.62 and 4.44 ± 2.51 , respectively.

9. Our results imply that during orthodontic mandibular canine movement the continuous and the interrupted force patterns at 120 gm initial force magnitude have similar effects as indicated by significant higher levels of alveolar bone resorptive biomarker (CS:WF6 epitope). However, the effect of the continuous force pattern at less than 120 gm needs further investigation.



ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่

Copyright© by Chiang Mai University
All rights reserved



ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่

Copyright© by Chiang Mai University
All rights reserved