

Effect on the Pain Characteristics of Tension-Type Headache by Buccomucosal Linea Alba

Hyoung-Sok Kim, D.D.S.,M.S.D.,Ph.D.¹, Q-Schick Auh, D.M.D.,M.S.D.,Ph.D.¹,
Jung-Pyo Hong, D.M.D.,M.S.D.,Ph.D.^{1,2}, Yang-Hyun Chun, D.M.D.,M.S.D.,Ph.D.¹

Dept. of Oral Medicine, School of Dentistry, Kyung Hee University¹
Institute of Oral biology, School of Dentistry, Kyung Hee University²

This study was designed to evaluate the pain characteristics of tension-type headache by buccomucosal linea alba. Patients with tension-type headache visited the Department of Oral Medicine, K University Dental Hospital were recruited to this study. Experimental group (n=79) was composed of tension-type headache with buccomucosal linea alba and control group (n=79) was composed of tension-type headache without buccomucosal linea alba. Evaluation list was pain quality, pain intensity, pain laterality, pain increase by routine physical activity and then it was analyzed statistically.

The results were as follows :

1. Pain quality of tension-type headache patient was not significantly different by buccomucosal linea alba.
2. Pain intensity of tension-type headache patient was significantly different by buccomucosal linea alba. (p=.043).
3. Pain laterality of tension-type headache patient was not significantly different by buccomucosal linea alba.
4. Pain increase by routine physical activity of tension-type headache patient was not significantly different by buccomucosal linea alba.

Therefore, it was considered that the tension-type headache patient was influenced by buccomucosal linea alba in the pain quality.

Key words : Buccomucosal Linea Alba, Tension-Type Headache, Pain, Bruxism, Clenching

I. INTRODUCTION

A headache is a type of pain that everyone is subject to struggling with in their daily lives. In

1962, the Ad Hoc Committee has been the first to categorize headaches into migraines, muscle contraction headache, combined headache and so on.¹⁾ Later in 1988, the International Headache Society reclassified into primary headaches such as migraines, tension-type headache, clusters headache, the uncategorized headaches, and secondary headaches associated with head injury, vascular disorders, metabolism disorders, facial disorders including the teeth and the oral cavity. Tension-type headache(TTH), in particular, was classified into episodic and chronic depending on the date of the outbreak, and these were further

Corresponding author : Yang-Hyun Chun
130-701 Department of Oral Medicine, Kyung Hee University, School of Dentistry Hoegi-dong 1, Dongdaemun-ku, Seoul 130-701, Korea
Tel: 82-2-958-9359
Fax: 82-2-968-2043
E-mail: chunyh@khu.ac.kr

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subdivided into those associated with the muscles surrounding the cranium or not.²⁾ In 2004, based on the previous classifications, tension-type headaches were further categorized into infrequent episodic tension-type headache, frequent episodic tension-type headache, and chronic tension-type headaches.³⁾

Tension-type headaches are those from which a patient feels that the both temporalis muscles or occipital region are being pressured or squeezed.⁴⁾ Tension-type headache diagnostic criteria suggested by the International Headache Society include pain quality, pain intensity, pain laterality, pain increase due to daily activities, as well as symptoms including nausea, vomiting, photophobia, phonophobia, etc.³⁾ According to the studies done by Rasmussen et al⁵⁾, tension-type headaches cause pain of being tightened up, and the pain intensity is either mild or moderate. The source of the pain is laterality; it is featured by not being easily worsened by routine physical activities.⁶⁾

The exact causes of tension-type headaches are yet to be discovered, but a few possible causes have been suggested.⁷⁾ The headaents include cause factors such as oromandibular disorders, psychosocial stress, anxiety, depression, but a delusion or an idea, muscular stress, dcug overuse, and one of the disorders causing ular stress, dcug , and among thembut a case with more than one factor hasut a highestuch ority and the nextuclembng was pcesedaed as oromandibular disorders. Based on these, dedaal appcocug for tension-type headache was tried.

After Chun and Hong's⁸⁾ introduction to the relation between tension-type headaches and dentistry in 2003, there have been dental evaluations by Lee et al⁹⁾, clinical comparisons focusing on tension-type headaches and the pain of temporomandibular disorders by Auh et al¹⁰⁾, studies on the correlation of tension-type headaches and bruxism by Huh et al¹¹⁾, studies on the effects of the pain of the temporomandibular joint and masticatory muscles to tension-type headaches by Kim et al¹²⁾, as well as studies on temporoman-

dibular joint-muscle pain of tension-type headache patients by Oh et al.¹³⁾

Generally, the representative symptoms related with oral parafunctional habit are buccomucosal linea alba and tongue ridge¹⁴⁾. There are both cases which easily identified with the naked eye and not identified, but it is assumed to be in proportion to the degree of parafunctional habit¹⁵⁾, and such symptoms may disappear with the control of parafunctional habit, so it can be a standard to judge the mitigation of oral parafunctional habit.¹⁶⁾

Therefore this study, in the same way as above mentioned, observed how oral buccomucosal linea alba often occurring with abnormal oral dysfunction such as bruxism and clenching affected the pain characteristics of tension-type headache and was conducted to help identifying the interrelation between orofacial muscle disorders and tension-type headache.

II. MATERIALS AND METHODS

1. MATERIALS

Among the patients who visited the Department of Oral Medicine, K University Dental Hospital, 158 patients with tension-type headaches that correspond to the diagnostic criteria given by the International Headache Society were studied. Experimental group (n=79) was composed of tension-type headache with buccomucosal linea alba and control group (n=79) was composed of tension-type headache without buccomucosal linea alba.

2. METHODS

This study used ordinary dental examination records, temporomandibular disorder examination records, and additional survey results for basic information including the patient's gender, chief complaint, and onset of pain, as well as detailed information including pain quality, intensity, laterality, and increase by routine physical activities.

Table 1. The distribution of pain quality of tension-type headache

	experimental group (n=79)	control group (n=79)	<i>p</i> -value
dull pain	44 (55.7%)	55 (69.6%)	.071
sharp pain	35 (44.3%)	24 (30.4%)	

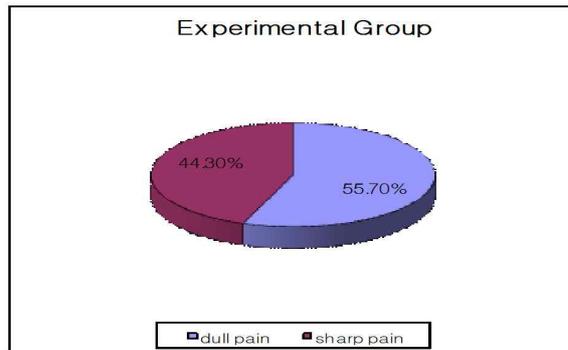


Fig. 1. This pie chart shows the ratio of dull pain and sharp pain in the tension-type headache patients with oral buccomucosal linea alba by pain quality.



Fig. 2. This pie chart shows the ratio of dull pain and sharp pain in the tension-type headache patients without oral buccomucosal linea alba by pain quality.

Pain quality was divided into sharp pain and dull pain; pain intensity was divided into mild pain and severe pain; pain laterality was divided into bilateral pain and unilateral pain; pain increase by routine physical activities such as talking or walking was divided into no change in pain and increase in pain.

The data acquired by these investigations conducted significance analysis based on descriptive statistics (%) and significance level 0.05, performed one-way ANOVA test and obtained study results using statistics package (SPSS version 17.0).

III. RESULTS

1. Evaluation of Pain Quality

The evaluation of pain quality, divided into dull pain and sharp pain, resulted in the distribution of the control group and experimental group as shown in Table 1. There were more dull pains than sharp

pains in the experimental group (Fig. 1) and control group (Fig. 2).

While the control group (55, 69.6%) had more dull pains than the experimental group (44, 55.7%) did, the experimental group (35, 44.3%) had more sharp pains than the control group (24, 30.4%) did. However, there was no statistical significance in the pain quality, evaluated in terms of dull pain and sharp pain ($p=0.071$).

2. Evaluation of Pain Intensity

The evaluation of pain intensity, divided into mild pain and severe pain, resulted in the distribution of the control group and experimental group as shown in Table 2. There were more mild pains than severe pains in the experimental group (Fig. 3) and control group (Fig. 4).

While the control group (65, 82.3%) had more mild pains than the experimental group (54, 68.4%) did, the experimental group (25, 31.6%) had more sharp pains than the control group (14, 17.1%) did.

Table 2. The distribution of pain intensity of tension-type headache

	experimental group (n=79)	control group (n=79)	p-value
mild pain	54 (68.4%)	65 (82.3%)	.043
severe pain	25 (31.6%)	14 (17.7%)	



Fig. 3. This pie chart shows the ratio of mild pain and severe pain in the tension-type headache patients with oral buccomucosal linea alba by pain intensity.



Fig. 4. This pie chart shows the ratio of mild pain and severe pain in the tension-type headache patients without oral buccomucosal linea alba by pain intensity.

There was a statistical significance in the pain intensity, evaluated in terms of mild pain and severe pain ($p=0.043$).

3. Evaluation of Pain Laterality

The evaluation of pain laterality, divided into bilateral pain and unilateral pain, resulted in the distribution of the control group and experimental group as shown in Table 3. There were more unilateral pains than bilateral pains in the experimental group (Fig. 5) and control group (Fig. 6).

While the experimental group (33, 41.8%) had more bilateral pains than the control group (30,

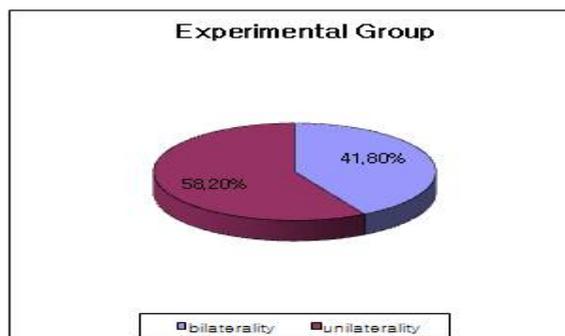


Fig. 5. This pie chart shows the ratio of bilaterality and unilaterality in the tension-type headache patients with oral buccomucosal linea alba by pain laterality.

Table 3. The distribution of pain laterality of tension-type headache

	experimental group (n=79)	control group (n=79)	p-value
bilaterality	33 (41.8%)	30 (38.0%)	.629
unilaterality	46 (58.2%)	49 (62.0%)	

Table 4. The distribution of pain aggravation of tension-type headache

	experimental group (n=79)	control group (n=79)	<i>p</i> -value
no change	16 (20.3%)	20 (25.3%)	.451
change	63 (79.7%)	59 (74.7%)	



Fig. 6. This pie chart shows the ratio of bilaterality and unilaterality in the tension-type headache patients without oral buccomucosal linea alba by pain laterality.

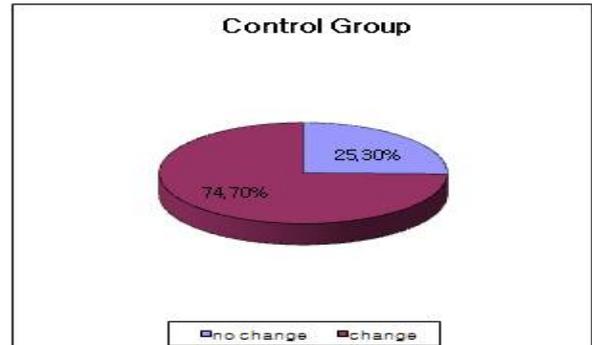


Fig. 8. This pie chart shows the ratio of no change and change by routine activity in the tension-type headache patients without oral buccomucosal linea alba by pain aggravation.

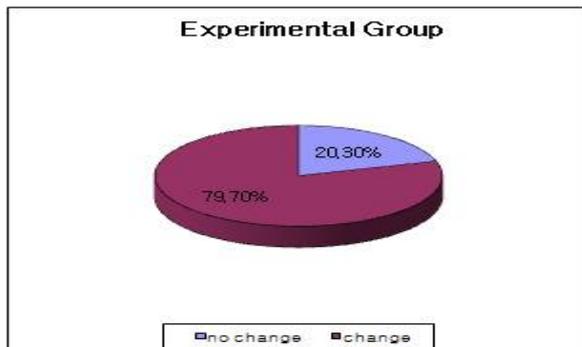


Fig. 7. This pie chart shows the ratio of no change and change by routine activity in the tension-type headache patients with oral buccomucosal linea alba by pain aggravation.

38.0%) did, the control group (49, 62.0%) had more unilateral pains than the experimental group (46, 58.2%) did. However, there was no statistical significance in the pain laterality, evaluated in terms of bilateral pain and unilateral pain ($p=0.629$).

4. Pain Increase by Routine Physical Activities

The evaluation of pain increase by routine physical activities resulted in the distribution of the control group and the experimental group as shown in Table 4. There were more changes in pain rather than no change in pain by routine physical activities in the experimental group (Fig. 7) and control group (Fig. 8).

While the control group (20, 25.3%) experienced no change in pain by routine physical activities more than the experimental group (16, 20.3%) did, the experimental group (63, 79.7%) experienced more changes in pain by routine physical activities than the control group (59, 74.7%) did. However, there was no statistical significance in the pain increase by routine physical activities, evaluated in terms of pain increase by routine physical activities ($p=0.451$).

IV. DISCUSSION

Headaches which everybody experiences at least once during routine physical activities, since divided systemically¹⁾, the differential diagnosis of migraine and tension-type headache has remained as a major task not only to patients but also to clinicians. However in 1988, International Headache Society set the diagnostic criteria of tension-type headache²⁾, in 2004 complemented and organized them³⁾, one important standard of which was whether pain quality, pain intensity, pain laterality and pain increase by routine physical activities, and there relative comparison based on these was proposed to become a differential diagnosis standard of migraine and tension-type headache and actually became the diagnosis standard often used in clinical practices.

In a study by Chun and Hong⁸⁾, they proposed that tension-type headache has close relationship in terms of dental aspects, a study by Lee et al⁹⁾ reevaluated tension-type headache and showed the major symptoms were similar to the main ones of the temporomandibular disorders such as joint pain, restricted mouth opening, and joint sound, and a study by Auh et al¹⁰⁾ studied the pain characteristics in temporomandibular disorders and tension-type headache with pain quality, pain intensity, pain laterality and pain increase by routine physical activity proposed by International Headache Society and met with various results.

Furthermore a study by Huh et al¹¹⁾, which investigated the interrelationship between the tension-type headache and oral parafunction such as bruxism and clenching, expanded the relevance between masticatory system and tension-type headache. In a study, Kim et al¹²⁾ investigated the effects of the pain on the temporomandibular joint and masticatory muscles to tension-type headache, and the study found out that tension-type headache often increase pain by routine physical activities, especially that tension-type headache patients with both arthralgia (TMJ pain) and myalgia (pericranial muscle pain) are more aggravated by physical

activity than tension-type headache patients with either one, and highlighted the relationship with dentistry, especially temporomandibular disorders. Recently, Oh et al¹³⁾ studied the pattern of pain on temporomandibular joint-muscle area in tension-type headache patients, and found no statistical significance in sex and oral parafunction among the arthralgia group, myalgia group, and arthromyalgia group. However in terms of age, they had a statistical significance. Especially both the arthromyalgia group and the myalgia group showed statistically remarkable difference, and the study came to a conclusion that as patients become older, tension-type headache with myalgia happens more frequently than tension-type headache with arthralgia and myalgia does.

Generally speaking, according to Roh et al¹⁷⁾, men in their 50s and women in their 20s are most likely to get tension-type headaches. Okeson¹⁸⁾ reported that the average age in which one gets the most tension-type headaches is 34.2 for men and 33.8 for women. Insensitive to gender, tension-type headache reaches its peak in 30's and 40's,⁵⁾ and in this study, the average age of control group is 23.8, and that of experimental group is 23.7, so it was somewhat different with the previous studies, and this situation is estimated to be originated from the difference of study period.

Tension-type headache is a type of headache which is dull or non-pulsative pain, where one feels like being heavily pressed or squeezed around the head or shoulders.^{19,20)} Rasmussen et al⁵⁾ reported that 78% of the episodic tension-type headache patients experienced pain of being pressed. Chun²¹⁾ reported that 85% of tension-type headache patients felt dull pain, and 83% of the patients felt heavy pressure. Roh et al¹⁷⁾ reported that 51.2% of tension-type headache patients felt pain of being pressed or squeezed. Additionally, Auh et al¹⁰⁾ reported that 80% of tension-type headache patients experienced dull pain.

In this study, as the result of evaluating pain quality, divided into dull pain and sharp pain, consistently with previous studies, there were more

dull pains than sharp pains in experimental group, and also in control group, there were more dull pains than sharp pains. While the control group (55, 69.6%) had more dull pains than the experimental group (44, 55.7%) did, the experimental group (35, 44.3%) had more sharp pains than the control group (24, 30.4%) did. This means that tension-type headache patients with buccomucosal linea alba had more sharp pains in terms of pain quality, but there was no statistical significance in the pain quality, evaluated in terms of dull pain and sharp pain ($p=0.071$).

Tension-type headache is characterized by a mild or moderate pain intensity.³⁾ Rasmussen et al⁵⁾ reported that 99% of episodic tension-type headache patients show mild or moderate pain intensity. Meanwhile, Gobel et al²²⁾ reported that 44% of chronic tension-type headache patients showed moderate pain intensity, and 42% of the patients showed severe pain intensity. Roh et al¹⁷⁾ reported the percentages of each pain intensity as 48.1% for mild pain, 43.8% for moderate pain, and 8.0% for severe pain. On the other hand, Auh et al¹⁰⁾ reported that 89.1% of tension-type headache patients experienced mild or moderate pain.

In this study, as the result of evaluating pain intensity, divided into mild pain and severe pain, consistently with previous studies, there were more mild pains than severe pains in experimental group, and also in control group, there were more mild pains than severe pains. While the control group (65, 82.3%) had more mild pains than the experimental group (54, 68.4%) did, the experimental group (25, 31.6%) had more sharp pains than the control group (14, 17.1%) did. This means that tension-type headache patients with buccomucosal linea alba had relatively more severe pains in terms of pain intensity, and there was also a statistical significance in the pain intensity, evaluated in terms of mild pain and severe pain ($p=0.043$).

Tension-type headaches are generally characterized by bilateral pain.³⁾ Rasmussen et al⁵⁾ reported that 90% of the patients feel bilateral pain,

while Roh et al¹⁷⁾ reported that 55.6% of the patients experience such pain. However, according to the studies of Auh et al,¹⁰⁾ 63.6% of the patients feel unilateral pain. In addition, Lavados and Tenhmm²³⁾ reported that female patients experience bilateral pain more frequently than male patients.

As the result of evaluating pain laterality, divided into bilateral pain and unilateral pain, this study showed the same result with a previous study by Auh et al¹⁰⁾, that is, there were more unilateral pains than bilateral pains in experimental group. Also in control group, there were more unilateral pains than bilateral pains. While the experimental group (33, 41.8%) had more bilateral pains than the control group (30, 38.0%) did, the control group (49, 62.0%) had more unilateral pains than the experimental group (46, 58.2%) did. This means that tension-type headache patients with buccomucosal linea alba had more bilateral pain in terms of pain laterality, but there was no statistical significance in the pain laterality, evaluated in terms of bilateral pain and unilateral pain ($p=0.629$).

In general, tension-type headaches are characterized by not increasing in pain through daily activities.³⁾ Rasmussen et al⁵⁾ reported that 74% of tension-type headache patients did not experience pain increase by routine physical activities, while Roh et al¹⁷⁾ reported that 32.1% of tension-type headache patients felt pain increase due to daily activities. Among episodic tension-type headache patients, it has been reported that 69.8% of the male patients and 75.5% of the female patients felt pain increase by routine physical activities.²³⁾ In addition, Auh et al¹⁰⁾ reported that the frequency of pain increase due to daily activities such as mastication and conversation was 62.8%. Whereas the results of the previous studies were conflicting and varied, the result of this study was relatively consistent. Ansistent. Ansistent. Ansistent. increase by routine physical activities, there were more changes in pain rAnher than no change in pain by routine physical activities in experimental group, and also in control group, there

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국문초록

협점막 백선이 긴장성 두통 환자의 통증 양상에 미치는 영향

경희대학교 치의학전문대학원 구강내과학교실¹
경희대학교 구강생물학연구소²

김형석¹ · 어규식¹ · 홍정표^{1,2} · 전양현¹

이갈이나 이악물기 등과 같은 비정상적인 구강기능장애의 주된 임상 소견으로 흔히 관찰되는 구강 협점막 백선이 긴장성 두통의 통증양상에 어떠한 영향을 미치는가를 관찰하고자 국제두통학회의 진단기준에 부합되는 긴장성 두통이 있는 환자 중 구강 협점막 백선이 있는 79명을 실험군으로 하고, 구강 협점막 백선이 없는 환자 79명을 대조군으로 하여 통증의 질과 강도, 양측성 유무 그리고 일상생활에서의 증감 유무 등을 관찰하고 통계 처리하여 다음과 같은 결과를 얻었다.

1. 긴장성 두통환자의 통증의 질은 구강 협점막 백선의 유무에 따라서 통계학적인 차이가 없었다.
2. 긴장성 두통환자의 통증의 강도는 구강 협점막 백선의 유무에 따라서 통계학적인 차이가 있었다($p = .043$).
3. 긴장성 두통환자의 통증의 양측성 유무는 구강 협점막 백선의 유무에 따라서 통계학적인 차이가 없었다.
4. 긴장성 두통환자의 통증의 일상생활에서의 증감 유무는 구강 협점막 백선의 유무에 따라서 통계학적인 차이가 없었다.

이상의 결과로 구강 협점막 백선이 있는 긴장성 두통 환자는 구강 협점막 백선이 없는 긴장성 두통 환자에 비해서 통증의 강도가 더 심하기 때문에 임상적으로 진료에 임 할 때 고려해야 하며, 이에 따른 추가적이고 지속적인 연구가 필요하리라고 생각된다.

주제어 : 협점막 백선, 긴장성 두통, 통증, 이갈이, 이악물기
