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Clinical Study

Clinical observation of tuina plus heat-sensitive moxibustion for temporomandibular disorders

推拿配合热敏灸治疗颞下颌关节紊乱病临床观察

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Abstract
Objective: To observe the clinical efficacy of tuina plus heat-sensitive moxibustion in treating temporomandibular disorders (TMD).
Methods: Fifty patients with TMD were randomized into a treatment group and a control group, 25 cases in each group. The treatment group was intervened by tuina plus heat-sensitive moxibustion, while the control group was by medication. The Fricton-Shiffman craniomandibular index (CMI) was observed before and after intervention, and the clinical efficacies of the two groups were also evaluated.
Results: There was no significant difference in comparing the CMI score between the two groups before intervention ($P>0.05$). After a treatment course, there were significant improvements in evaluating the CMI score in both groups ($P<0.01$), and the improvement was more significant in the treatment group than that in the control group ($P<0.01$). The total effective rate of the treatment group was significantly higher than that of the control group ($P<0.01$).
Conclusion: Tuina plus heat-sensitive moxibustion is effective in treating TMD, and it's safe, without adverse reactions, thus worth promoting in clinic.
Keywords: Tuina; Massage; Temporomandibular Joint Disorders; Moxibustion Therapy; Heat-sensitive Moxibustion; Moxa Stick Moxibustion

【摘要】目的：观察推拿配合热敏灸治疗颞下颌关节功能紊乱(temporomandibular disorders, TMD) 的临床疗效。**方法：**将 50 例 TMD 患者随机分为治疗组和对照组，每组 25 例。治疗组采用推拿加热敏灸治疗，对照组采用药物治疗。通过对比治疗前、后患者 Fricton 颞下颌关节紊乱指数及治疗后两组临床疗效进行评价。**结果：**治疗前两组患者 Fricton 颞下颌关节紊乱指数组间比较差异无统计学意义($P>0.05$)。治疗 1 个疗程后两组患者 Fricton 颞下颌关节紊乱指数均较治疗前显著改善($P<0.01$)，且治疗组改善优于对照组($P<0.01$)。治疗组总有效率显著高于对照组($P<0.01$)。**结论：**推拿配合热敏灸治疗 TMD 疗效确切，安全无毒副作用，值得临床推广应用。
【关键词】推拿；按摩；颞下颌关节疾病；灸法；热敏灸；艾条灸
【中图分类号】R244.1　　**【文献标志码】**A

As a common orofacial disease, temporomandibular disorders (TMD) are usually caused by functional and organic problems of temporomandibular joint and its surrounding soft tissues. TMD is manifested by pain in jaw joint area, motor dysfunction, and clicking sound during the movement of jaw. Young people often run a high risk of developing TMD. It may affect patients' life and work when the symptoms get serious. During the recent years, our department has adopted tuina plus heat-sensitive moxibustion in treating TMD, and the report is given as follows.

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1 Clinical Materials

1.1 Diagnostic criteria

According to the relevant diagnostic criteria in the *Practice of Stomatology*[1]: difficulty opening mouth wide, pain in local area majorly presenting as pain in jaw joint area or the surrounding muscles when opening mouth or chewing; clicking sound when opening or closing mouth; X-ray reveals an abnormal temporomandibular joint space.

1.2 Inclusion criteria

Conforming to the above diagnostic criteria; no use of medications, blocking therapy, or other treatments for TMD lately; those willing to accept the involved intervention and having signed the informed consent form.

1.3 Exclusion criteria

Temporomandibular pain caused by other problems including periodontal disease, gum infection, and ear diseases; complicated with severe cardiac, cerebral, or kidney diseases or mental disorders; those unable to fulfill the whole treatment or those quit halfway.

1.4 Statistical analysis

The SPSS 13.0 version software was adopted for data analyses. The measurement data were expressed by ($\bar{x} \pm s$). The inter-group comparisons were performed by *t*-test, and the intra-group comparisons were by paired *t*-test. $P < 0.05$ was considered to have a statistical significance.

1.5 General data

The 50 subjects recruited from the outpatients of Acupuncture and Tuina Department. They were randomized into a treatment group and a control group, 25 cases in each group. In the treatment group, the ages varied from 18 years old to 47 years old, and the disease durations ranged from 3 d to 114 d. In the control group, the ages varied from 21 years old to 44 years old, and the disease durations ranged from 7 d to 82 d. There were no significant differences in comparing the gender, age, and disease duration between the two groups ($P > 0.05$), indicating the comparability (Table 1).

Table 1. Comparison of general data

Group	*n*	Gender (case)		Mean age ($\bar{x} \pm s$, year)	Mean duration ($\bar{x} \pm s$, day)
		Male	Female		
Treatment	25	11	14	31.4±4.7	13.8±2.5
Control	25	9	16	29.6±3.6	7.9±3.6

2 Treatment Methods

2.1 Treatment group

2.1.1 Tuina

The patient was asked to take a supine position and turn the neck to the healthy side. The practitioner sat by the head of the treatment table. First, Rou-kneading with thenar eminence was performed on the affected area. The manipulation should be gentle and performed till heat penetrates into deep tissues (Figure 1). Then, one-finger Tui-pushing manipulation was used on the temporomandibular joint till there was a distending sensation in the treated area. This manipulation should be lasting, even, and forceful, with the wrist swinging fast while the thumb moving slowly (Figure 2). Afterwards, Shangguan (GB 3), Xiaguan (ST 7), Jiache (ST 6), Ermen (TE 21), Tinggong (SI 19), Tinghui (GB 2), Qianzheng (Extra, locates at 0.5-1.0 cun in front of the ear lobe), and Yifeng (TE 17) were treated with digital An-pressing one by one in sequence (Figure 3). Finally, when the patient was in a sitting position, the practitioner treated bilateral Hegu (LI 4) with digital An-pressing manipulation (Figure 4). Meanwhile, the patient was asked to open and close his mouth repeatedly in a small range.

2.1.2 Heat-sensitive moxibustion

The heat-sensitive moxibustion treatment referred the book *A New Moxibustion Therapy Based on Acupoint Thermal Sensitization*[2] written by Prof. Chen Ri-xin.

Figure 1. Rou-kneading with thenar eminence

Figure 2. One-finger Tui-pushing manipulation

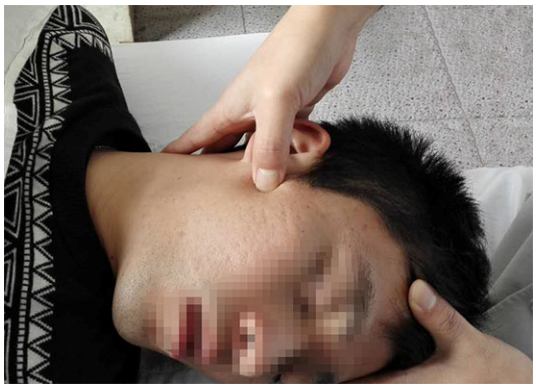

Figure 3. An-pressing facial acupoints

Figure 4. An-pressing Hegu (LI 4)

Operation: The patient took a sitting position. The practitioner sat by the affected side of the patient to detect the thermal sensitization in temporomandibular region [involving Shangguan (GB 3), Xiaguan (ST 7), Jiache (ST 6), Qianzheng (Extra, locates at 0.5-1.0 cun in front of the ear lobe)]. Afterwards, the heat-sensitized points were treated with moxibustion till the heat-sensitized phenomena were gone (i.e. till the disappearance of phenomena such as heat penetration, heat transference, and heat expansion, while the duration varied in individuals).

2.2 Control group

The control group was prescribed with Diclofenac sodium sustained release tablets (Beijing Nuohua Pharmaceutical Co., Ltd.), orally taking, 75 mg each time, once a day; and Eperisone hydrochloride tablets [Weicai (China) Pharmaceutical Co., Ltd., China], orally taking, 50 mg each time, 3 times a day.

2.3 Treatment duration

The tuina and heat-sensitive moxibustion were given once a day, 10 d as a course, and the therapeutic efficacy was evaluated after a course.

3 Therapeutic Efficacy

3.1 Observation items

The Fricton-Shiffman craniomandibular index (CMI) was adopted to evaluate the temporomandibular disorder in a quantitative manner (Table 2).

Table 2. Fricton-Shiffman CMI scoring

Component	Scoring method	Range of score (point)
Mandibular movement (MM)	Positive item count	0-16
Joint noises (JN)	Positive item count	0-4
Joint palpation (JP)	Number of tender points	0-6
Dysfunction index (DI)	DI=(MM+JN+JP)/26	0-1
Muscle palpation (MP)	Number of tender points	0-28
Palpation index (PI)	PI=MP/28	0-1
CMI	CMI=(DI+PI)/2	0-1

3.2 Criteria of therapeutic efficacy[3]

Recovery: Pain in opening mouth and chewing was gone, tenderness in the relevant muscles and clicking sound were gone, chewing function was restored, and mouth can open normally.

Markedly effective: Pain in opening mouth and chewing was gone, chewing function was restored, and mouth can basically open normally.

Improved: There were improvements in symptoms and signs.

Invalid: There were no discernible changes in symptoms and signs.

3.3 Treatment results

3.3.1 Comparison of CMI

There was no significant between-group difference in comparing the CMI score before the intervention ($P>0.05$). There were significant improvements in evaluating the CMI scores in both groups after the intervention ($P<0.01$), and the improvement was more significant in the treatment group than that in the control group ($P<0.01$), (Table 3).

Table 3. Comparison of CMI score

Group	*n*	Pre-treatment	Post-treatment
Treatment	25	0.189±0.049	0.008±0.007[1)2)]
Control	25	0.193±0.057	0.012±0.011[1)]

Note: Intra-group comparison, 1) $P<0.01$; compared with the control group after intervention, 2) $P<0.01$

3.3.2 Comparison of the clinical efficacy

After a treatment course, the total effective rate was 92.0% in the treatment group versus 76.0% in the control group, and the difference was statistically significant ($P<0.01$), indicating that the efficacy of the treatment group should be superior to that of the control group (Table 4).

Table 4. Comparison of the clinical efficacy (case)

Group	*n*	Recovery	Markedly effective	Improved	Invalid	Total effective rate (%)
Treatment	25	7	11	5	2	92.0[1)]
Control	25	3	8	8	6	76.0

Note: Compared with the control group, 1) $P<0.01$

4 Discussion

TMD belongs to the range of Bi-impediment syndrome or cheek pain in the traditional Chinese medicine (TCM), usually caused by bad mood, weak body constitution, injury of muscles and tendons from exhaustion, and contracting pathogens, etc. The stagnation in qi activities, blood vessels, and meridians finally leads to the development of the disease. TMD is generally treated by promoting qi and blood circulation, and activating tendons and meridians[4-6]. Tuina works to promote qi and blood circulation, and relax tendons and unblock meridians. It can improve the local microcirculation through the stimulation of manipulations, promote the decomposition and absorption of inflammatory mediators, release muscular spasm, and mitigate pain[7-9]. As a novel moxibustion method, heat-sensitive moxibustion treats the thermal-sensitized points with suspended moxibustion. Its treatment principle is to give moxibustion based on the differentiation of thermal sensitization. It's believed that the key point in performing moxibustion is to obtain qi sensations. This treatment emphasizes the moxibustion sensations brought by thermal sensitization and the transference of meridian qi. Heat-sensitive moxibustion can warm and unblock meridians and collaterals, expel cold and release impediment, promote qi and blood circulation, and relax tendons and cease pain[10-12]. Studies show that by stimulating the thermal-sensitized points, heat-sensitive moxibustion can effectively improve the hemorheologic and hemodynamic values, promote the metabolism, reduce inflammatory stimulation, and up-regulate the pain threshold[13-15]. Combining use of tuina and heat-sensitive moxibustion can achieve an even more significant therapeutic efficacy.

The development of TMD is often related to over-chewing, biting hard stuff, and contracting wind cold. Hence, when offering treatment, doctors should also ask the patient to correct chewing habits and avoid wind cold, for consolidating the treatment result and preventing the relapse. It's also suggested that TMD patients often run a high risk of mental problems, such as emotional events, somatization disorder, psychosocial stress, and pain catastrophizing. Therefore, besides conventional treatment, psychological intervention should also be adopted to regulate patients' emotion and enhance the therapeutic efficacy[16-18].

In a word, the current study indicates that tuina plus heat-sensitive moxibustion is effective in treating TMD. This easy-to-operate method is worth promoting in clinic.

Conflict of Interest

The author declared than there was no potential conflict of interest in this article.

Statement of Informed Consent

Informed consent was obtained from all individual participants included in this study.

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