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Research Article

Prevalence of Temporomandibular Joint Disorder (TMD) in Multiple Sclerosis Patient

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ABSTRACT

Background & Aim: Temporomandibular joint disorders are the most common non-dental pain in the jaw and face region. The most prevalent symptom of this disorder is the limitation in the chewing muscles function or aching pain around the ear and on TM joint, which aggravated by jaw function. The present study determined the various TMJ disorders prevalence in the patients with multiple sclerosis in the ALZAHRA hospital, Isfahan MS society and Khorasgan Azad Dental School.

Materials and Method: In this descriptive-analytical study, 50 MS patients and 30 control subjects with the age range of 18-40 years old were selected by simple random sampling. Information regarding the course of MS and TMJ disorders were collected from all patients with MS as well as the control group using a questionnaire with the subjective and objective measures. Data of both groups were statistically analyzed by means of chi-square and exact Fisher tests.

Results: In MS patients; 11 (22%) showed limitation to open the mouth. Click sound were found among 37 (74%) of MS and 14 (46.7%) of control subjects (p=0.01). Chewing muscle pain was noted in 14 (28%) MS and 2 (6.7%) controls with the significant differences (p=0.02). TMD symptoms were significantly more prevalent in MS patients compared to the control group. Among the studied mentioned symptoms, significant difference between MS group and the controls were found for the restricted opening of the mouth (*P*=0.005) and pain in area of masseter or temporalis muscles (0.048).

Conclusion: According to the present study, TMD symptoms prevalence in patients with MS was higher than control subjects. However, significant differences were found only in some TMD symptoms.

Keywords: Multiple sclerosis, temporomandibular disorder, Pain, Click

INTRODUCTION

TMJ disorders have certain position in medicine. During recent years, researchers could identify the complex relationship between facial nerves, muscles and joints which lead to chronic pain in head, face and neck. Carious factors are effective in emergence of TMJ disorders which one of them is mental factors and anxiety [1].

About %65-85 of U.S people have experienced symptoms of TMJ during their life and about %12 have suffered long-term pain and disability which are chronic symptoms. Of course, only %5.7 of them need treatment due to severity of symptoms [2]. Etiology of TMJ disorders have several factors and different factors, alone or

together, cause this disease. Generally, etiologic factors of these disorders have been classified into four groups: trauma, anatomic factors, pathophysiologic factors and mental factors. Trauma is imposed as lateral damages like fist blow and damages caused by dentistry or pressure forces as para-functional habits on chewing system and also bruxism and biting lower lip which are known as factors intensifying disease [3]. Pathophysiologic factors are reflection of systemic conditions and their treatment is accompanied with consultation. These disorders include degenerative diseases, endocrine, infections, and rheumatism and blood disorders. The relationship between mental disorders and TMJ disorders requires more research but it is believed that mental and emotional factors can be intensifying factors of joint disorders. Therefore, considering social-mental factors during patient examination for TMJ has importance [3].

Multiple sclerosis is common disease of nervous system on human. This disease belongs to a group of nervous system disease which is accompanied with degeneration of myelin in neural pathways. These symptoms can be as sudden dark vision, inability in organ movement, imbalance, strabismus and sensory disorders and symptoms. Recently, number of MS patients have increased and regarding these patients are in lower public and social position compared to healthy people and have disabilities in their daily activities , it is necessary to determine TMJ disorders in then. Recent research was conducted to determine the prevalence of TMJ in MS patients and determining effect of this disease in performance of TMJ.

MATERIAL AND METHOD

This is descriptive-analytical cross-section study in ALZAHRAh Hospital and Isfahan MS patient' society and dentistry faculty of Khorasgan. Statistical sample include two patients' group (MS patients) and control group and simple random sampling method was used. Group patients were those that their MS was confirmed by neurologist and intended to participate in the study. Control group are among those referred to diagnosis ward of dentistry faculty. Individuals lower than 18 years old and those suffering disease other than MS were excluded. Questionnaire was used to gather data. In order to measure maximum opening of mouth, a ruler was used.

Generally, 80 individuals were examined that among them, 50 (18 males and 32 female) were MS patients who were selected in Isfahan MS patient society and MS ward of ALZAHRA Hospital. Age range was 18-40 years old. Purpose of examination and questionnaire completion was explained for each subject and if ready, first demographic information (gender, education, marital status and age) were taken. Then, some questions were asked about MS disease and initial symptoms and other questions. Rest of questionnaire was completed by detailed TMJ examination in terms of limitation of opening, TMJ pain, chewing muscles pain, TMD symptoms and click. Questionnaire responses were set as yes or no. if answers were yes, one of the items "high", "low" and "seldom" were selected. In physical examination, first TMJ, which is located in anterior of lateral ear, was examined in terms of pain and sound. Touching joint with fingers as lateral and posterior touch was done during temporomandibular movement and rest. Diagnosing sound of click during opening and closing the mouth was done by examination and asking subject. Using ruler, amount of opening mouth was measured by ruler and the value lower than 25mm was considered as limitation in opening mouth. After detailed examination, chewing muscles (temporal, master and medial and lateral pterygoid) were examined bilaterally in terms of pain and sensitivity to touch. Touching temporal muscle: touching anterior part and root of muscle above zeugma arch and back of lateral corner of eye in temporal area.

Touching master muscle: it was done in lateral part of ramus on face. Touching medial pterygoid muscle: using finger in the medial part of ramus. Touching lateral pterygoid muscle: in back part with mild touch. Descriptive statistical indices were calculated for each question and

chi-square and exact Fisher tests were used for statistical analysis in case and control groups.

Findings

Among 80 subjects in this research, 79 (%98.8) were literate and 62 (%89.9) were married and all MS group suffered from common sclerosis.

In MS and control group, 11 (%22) and 2 (%6.7) felt pain after mild pressure on TMJ in rest. According to Fisher test there was no significant difference in terms of frequency of pain with mild TMJ pressure in both groups (p=0.12, table 1). After TMJ pressure during jaw movement, 20 subjects (%40) in case group and 8 subjects (%26.7) in control group reported pain. Based on chi-square test results, there was no significant difference in terms of frequency of pain with TMJ pressure in jaw movement of both groups (p=0.23; table 1).

In MS group and in 17 subjects (%34) click sound was heard during opening and closing mouth in TMJ; frequency of sound in TMJ in control group was 7 cases (%23.3). There was no significant difference in terms of click sound in TMJ during opening and closing mouth in both groups (p=0.31; table 1). In 25 MS subjects, jaw was diverted from its natural path during opening and closing the mouth. This frequency was 16 subjects (%53.3) in control group. There was no significant difference in terms of jaw deviation during opening and closing the mouth in both groups (chi-square, p=0.77, table 1). In case group samples, 11 subjects (%22) have limitation in opening mouth while in control group, there was no limitation. According to exact Fisher test, there were significant differences in terms of frequency in opening the mouth in both groups (p=0.005; table 1).

Results of chewing muscles examination are presented in table 2. Pain frequency of master muscle (exact Fisher test, p=0.05) and temporal (chi-square, P<0.05) in MS group relative to control group was significantly high but sensitivity of medial and lateral treiguid muscle in both groups was not significant. 28 subjects (%56) in MS group and 13 subjects (%43.3) in control group felt pain during over opening of mouth in TMJ that this difference was not significant (chi-square; p=0.27).

On the other hand, in MS group, 4 subjects (%8) have reported history of jaw displacement, tightness and locking jaw which has on occurrence in control group (exact Fisher test; p=0.29). In MS group, 9 subjects (%18) in control group, 3 subjects (%10) during chewing, speaking or jaw movements felt pain which this difference was not statistically significant in both groups (exact Fisher; p=0.52). Feeling sound in TMJ was seen in 37 subjects (%74) in case group and 14 subjects (%46.7) in control group that according to chi-square test results, difference of both groups was significant in terms of feeling sound in TMJ and control group subject have higher frequency (P=0.01).

Besides, frequency of subjects suffering MS with tightness, dryness and jaw fatigue (19 subjects, %38) was significantly higher than control group (1 subject; %3.3) (Chi-square test, P<0.001). Frequency of pain symptoms in ear, temporal and cheek in the case group was %28(14 subjects) and in control group was %13.3 (4 subjects).

There was no significant difference between them (chi-square; p=0.13).

In case group, 41 subjects (%82) have history of neck pain and frequent headaches that its frequency in control group was %43.3 (13 individuals). Frequency of neck pain and frequent headaches in case group individuals was significantly higher than control group (p=0.0001).

Table 1: frequency distribution of two MS groups based on findings of TMJ muscle examination

Variable group	MS	Control	P value
pain by mild pressure on TMJ in rest	11 (%22)	(%6/7) 2	0/12
Pain by TMJ pressure during jaw movement	20 (%40)	(%26/7) 8	0/23
Click sound in TMJ during opening & closing mouth	17 (%34)	(%23/3) 7	0/31
Jaw deviation and deflection	25 (%50)	16 (%53/3)	0/77
Limitation in opening mouth	11 (%22)	(%) 0	0/005

Table 2: frequency distribution of control and patient group based on chewing muscle pain

Chewing muscle pain	MS	Control	P value
Master	(%22) 11	(%3/3) 1	0/05
Temporal	(%24) 12	(%6/8) 2	0/05
Medial pterygoid	(%10) 5	0	0/15
Pterygoid	(%8/0) 4	(%3/3) 1	0/65

In MS group, in two cases (%4), head, neck and lower jaw trauma was seen and in control group, there was no head, neck and lower jaw trauma. According to exact Fisher test, there was no difference between two groups regarding history of impact on lower jaw, head and neck (p=0.53).

In general case, chewing muscles pain in 14 MS patients (%28) and 2 subject in control (%6.7) that their difference was significant (exact Fisher test, p=0.02). also, muscles pain and limitation of opening mouth was seen in 8 subjects (%16) of MS group and click sound and limitation in opening mouth was seen in 4 individuals (%8) in MS group that recent findings are not seen in control group. About muscle pain variable and limitation in opening mouth, there was no significant difference between both groups (exact Fisher test, p=0.29).

DISCUSSION

According to results of research, most TMJ disorder symptoms like joint pain during rest and jaw movement during opening the mouth, limitation in opening the mouth and sound of TMJ were more prevalent in MS group than control group that these results are consistent with Kovac et.al (2005) findings [14]. Suffering MS reduces motor skills of individual and reduces quality of mouth and tooth health behavior that its relationship with TMJ problems has been confirmed [5].

According to this research, prevalence of TMJ pain after touch and mild pressure during jaw movement in MS group was %40 and in control group was %26.7 (without significant difference). According to Kovac et.al (2005) results TMJ pain was seen in front of ear and during jaw movement in %22 of MS group and %4 in control group [4]. In this research, TMJ pain during jaw movement was %7. In Suveinen et.al (1983) research, TMJ pain in patients was %6-12 [6].

According to results of this research, TMJ click sound in %34 of MS and %23.3 control group was recorded. Kovac et.al (2005) did not observe significant difference in terms of TMJ sound frequency in MS and control subjects [4].

Prevalence of TMJ sound in Shahmohammadi research (2005) was %37.7 (2) and in Jager and Wooly research (2004) was %59 (that %38 was click sound) [7] and in Matsuka et.al research (1998) it was %43 [8]. Lower sound prevalence in some studies is due to that in these research, sound prevalence was reported on those who suffer joint sound but in other studies, sound in subjects with and without symptoms have been reported. It should be noted that click sound as TMD diagnosis criteria is doubtful [4].

In current research, %50 MS patients and %53.3 control individuals had jaw inflection and deviation during opening and closing mouth but this difference was not seen between both groups. Regarding that in various epidemiologic studies, individuals with general health defect show TMD symptoms with higher intensity [9], it is reasonable that prevalence of jaw deflection in this research is reported in MS and control group is higher than research in which only prevalence of this symptom was studied in control group.

In recent research, %22 MS patients and %0 control group have limitation in opening the mouth and difference between both groups was significant. Result of this research is higher than Matsuka et.al (1998) and Farsi (2003) research [10]. Of course, in this study, prevalence of this symptom in control and MS groups was studied. As a result, prevalence of mouth opening limitation in recent research with be higher than other research.

In present study, %16 of MS group and %0 of control group experienced chewing muscles pain with limitation in opening mouth and difference in both groups was significant. In Kovac et.al (2005) research, no subject has chewing muscle pain with mouth opening limitation [4].

According to this research, chewing muscles in %28 of MS group and %6.7 of control group was sensitive and painful (with significant

difference). In Kovac et.al (2005) research, %32 of MS group and %0 of control group suffered from facial muscles pain [4] and in Matsuka et.al research (1998), %21 were sensitive to touch of chewing muscles [8] which is near to results of our study.

According to our research, maximum prevalence of chewing muscles pain was related to temporal muscle and following it were master muscle and interior and exterior pterygoid muscle regarding sensitivity to touch. In Rider et.al research (1993), among chewing muscles, interior and exterior pterygoid muscles were first and second in terms of sensitivity to touch [11]. In Matlabnejad & Naji research (2033) [12] and in Shahmohammadi research (2005) [2], exterior and interior pterygoid muscles have high sensitivity to touch.

According to results, %56 of MS patients and %43.3 of control group suffered mouth pain in opening mouth and TMJ (without significant difference). Meanwhile, in Kovac et.al (2005) research, TMJ pain during opening mouth in MS group was %10 and in control group was %2 and difference of both groups was significant [4]. According to this research, pain in ear, temporal and cheek in %28 of MS group and %13.3 of control group and difference of both groups was not significant. In Kovac et.al (2005) research, face pain was reported in %54 of MS patients and %10 of control group and difference of both groups was significant [4]. In Goharian study (205), ear symptoms and headache in %2.9 of individuals was seen [10]. High frequency of this symptom in other research can be justified such that percent of ear symptom frequency of these individuals was related to TMD people but in this research, differences in pain frequency of ear, temporal and cheek in control and MS group was studied not in TMD people. Also there were differences in research in terms of study sample and symptoms.

Trauma is considered as a TMJ disorder etiologic factor [13]. Of course, in this study, only few number of individuals (%2.5) have head, neck and jaw trauma and their difference was not significant.

In recent study, among study symptoms, headache and frequent neck pain and click sound have highest frequency. In Rider et.al (1993), among those who suffer TMD, limitation of jaw movement and joint click and muscles fatigue have highest prevalence [11]. In other studies [2, 8, 12, and 14], joint sounds have higher prevalence among patients. Generally, significant difference in reporting TMJ disorders is caused by difference in evaluation techniques and lack of fixed difference of TMD and clinical criteria and history.

CONCLUSION

According to this research, prevalence of TMJ factors in MS group was higher than control group but it was significant in rare cases. Among symptom, headache, and frequent neck pain and TMJ sound was reported by patients and the most sensitive chewing muscle to touch was temporal, master and exterior pterygoid muscles (respectively).

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