Association between Temporomandibular Disorders and Fibromyalgia: A review

Peer review status:
No

Corresponding Author:
Dr. Silvia Del Prete,
DDS, Department of Oral and Maxillofacial Sciences, Sapienza University of Rome, Via Caserta 6 - Italy

Submitting Author:
Dr. Silvia Del Prete,
DDS, Department of Oral and Maxillofacial Sciences, Sapienza University of Rome, Via Caserta 6 - Italy

Other Authors:
Dr. Anna D'Urso,
DDS, Departement of Oral and Maxillofacial Sciences, Sapienza University of Rome, Italy - Italy
Dr. Emanuela Coppotelli,
DDS, Department of Oral and Maxillofacial Sciences, Sapienza University of Rome, Italy - Italy
Dr. Doria Tolevski Meshkova,
DDS, Department of Oral and Maxillofacial Sciences, Sapienza University of Rome, Italy - Italy

Article ID: WMC004781
Article Type: Review articles
Submitted on: 11-Dec-2014, 09:50:57 PM GMT    Published on: 12-Dec-2014, 09:40:17 AM GMT
Article URL: http://www.webmedcentral.com/article_view/4781
Subject Categories: ORTHODONTICS
Keywords: TMD, Fibromyalgia, ACR, DC/TMD, Functional Somatic Syndrome
How to cite the article: D'Urso A, Coppotelli E, Tolevski Meshkova D, Del Prete S. Association between Temporomandibular Disorders and Fibromyalgia: A review. WebmedCentral ORTHODONTICS 2014;5(12):WMC004781
Copyright: This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC-BY), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.
Source(s) of Funding:
None
Competing Interests:
None
Association between Temporomandibular Disorders and Fibromyalgia: A review

Author(s): D’Urso A, Coppotelli E, Tolevski Meshkova D, Del Prete S

Abstract

Fibromyalgia (FM) and Temporomandibular Disorders (TMD) are two different painful disorders whose clinical conditions often overlap. The presence of Fibromyalgia may represent a risk factor for the development of a temporomandibular disorder and worsen the prognosis. Several studies in the literature have highlighted common clinical symptoms and predisposing factors. However, the etiology of the two diseases have not been fully clarified yet in the literature. The purpose of the work is taking stock of the knowledge in the literature about the two diseases separately and then underlining the correlations.

Introduction

Fibromyalgia (FM) is defined by the American College of Rheumatology (ACR) as a disorder characterized by widespread pain and tenderness in at least 11 of 18 musculoskeletal sites for at least 3 months (1). Temporomandibular Disorders (TMD) is a generic term that identifies a number of clinical problems that involve the masticatory musculature, the temporomandibular joint and associated structures (2). TMD and FM are both musculoskeletal chronic pathologies. The pain due to Temporomandibular Disorders is localized, while the pain due to Fibromyalgia disease is diffuse and may involve different parts of the body. For this reason, it may be possible an overlap between FM and TMD (2).

Several studies in the past linked Fibromyalgia and Temporomandibular Disorders (3-8). In this studies Fibromyalgia was found to be very frequent in patients with TMD and vice versa. Fibromyalgia was considered a risk factor for the development of TMD (8). Both of these diseases share common symptoms such as muscle pain, generalized pain sensitivity, fatigue, difficulty concentrating (10). In patients with fibromyalgia and temporomandibular disorders are also frequently found: state of anxiety, depression and reduced stress response (11, 12).

The casual relationship between these two multifactorial and non-specific disorders is not yet clarified and has opened a debate on the possibility of considering them as distinct clinical entity or not. The purpose of this article is to clarify the status of the literature on the subject, highlighting the aspects of each disease separately and then underlining the correlations.

Temporomandibular Disorders (TMD)

Temporomandibular disorders include the collection of pathological condition of the temporomandibular joint, mastication muscles and associated structures (13). The complexity of the disease has led, in recent years, to consider TMD as multifactorial disorders, both for the frequent association of causal factors and for the current inability of researchers to recognize the true etiological factors.

Typical aspects of temporomandibular disorders, such as temporomandibular joint pain and functional limitation of mandibular movements, are frequently associated with painful symptoms including neck pain, headaches and brachialgia. Moreover, the presence of symptoms such as tinnitus and vertigo often put the patient with TMD in differential diagnosis with ENT pathology (14).

The literature shows that about 60%-70% of the population has or reports at least one sign of temporomandibular disorders, but only the 5% is under treatment for the disease (15). TMD are the second most common cause of facial pain, occurring mainly in young and middle-aged women (16). The chronic form of these pathological conditions represents a very negative development.

The treatment of the disorder involves multiple health care providers and are more complex and less auspicious prognosis (17). The increase in the population of this type of disease has a very high social cost (in the US was estimated at 4 million dollars) (18).

The most common worldwide used tool for the diagnosis of temporomandibular disorders is the Diagnostic Criteria (DC/TMD) System, updated in...
2014; it represents a useful method in clinical practice for high reliability.

The new classification DC/TMD divides the DTM in 11 clinical forms, grouped in 2 categories:

- **Painful** (pain disorders): arthralgia, myalgia (local myalgia, myofascial pain, myofascial pain reported), headache attributed to the TMD.
- **Articular** (joint disorders): four disorders dislocation of the disc (the disc dislocation reduced, irreducible dislocation of the disc without limitation of mouth opening or limitation of mouth opening displacement and reduced with intermittent lock), degenerative diseases of ATM and subluxation.

Several studies have highlighted some predisposing factors for the development of TMD:

- Female gender
- Somatic symptoms and psychological effects (somatization, dissatisfaction with life, mental instability, depression)
- Vulnerability to musculoskeletal pain present throughout the body

The temporomandibular disorders fall within the Group of Regional Pain Syndrome (along with interstitial cystitis, irritable bowel syndrome, the vulvodynie, chronic pain in lower back) and often co-exist with common chronic algic diseases, such as fibromyalgia, in the wider family of central sensitization syndromes.

**Fibromyalgia (FM)**

Fibromyalgia is a syndrome characterized by chronic widespread, musculoskeletal pain, stiffness, not restored sleep, fatigue, cognitive dysfunction (known as the "fibro fog") and, consequently, impaired daily activities. The diagnostic feature is the presence of "tender points" in the muscle and connective tissue in all four quadrants of the body.

The diagnosis is made using the Fibromyalgia Classification Criteria given by the American College of Rheumatology (ACR) in 1990 (Figure 1). Although the ACR criteria are the standard criteria currently used to study FM, it is believed that fibromyalgia is not a musculoskeletal disorder; rather, it fits into a larger group of disorders that includes chronic widespread pain, diffuse tenderness, severity and discomfort.

Nel 1984 Yunus included FM in the family of "Central Sensitization Syndromes", including a series of diseases with clinical and pathophysiological continuous and an overlap between phenotypic and nosographic expression.

Fibromyalgia is characterized by the following symptoms:

- Widespread musculoskeletal pain and tender points
- Sleep not restored
- Morning stiffness
- Fatigue
- Headache
- Irritable bowel syndrome
- Temporomandibular disorders
- Subjective numbness, swelling, tingling
- Chest pain
- Dizziness
- Cognitive dysfunction, short-term memory loss
- Restless legs
- Mood disorders- anxiety, depression

The clinical aspects of this pathology significantly reduces the quality of life of subjects affected and it...
represent a social and economic cost for patients and their families.

**Temporomandibular Disorders and Fibromyalgia**

Several studies, in the past, have connected fibromyalgia and temporomandibular disorders (TMD). These studies have established the frequency with which the TMD were found in patients with fibromyalgia and vice versa.

In a large sample of patients affected by fibromyalgia the 94% reported TMD symptoms, including pain and difficulty in chewing and in mouth opening, which followed preexisting fibromyalgia long lasting pain. Clinical studies revealed that the 68% to the 97% of fibromyalgia patients have TMD signs and symptoms. Patients affected by fibromyalgia most frequently report TMD symptoms than vice versa. A study reported that the 75% of FM patients met the TMD criteria, whereas only 18% of TMD patients fulfilled the FM criteria.

Two prospective cohort studies, of both adults and adolescents, found that the presence of multiple pain conditions, elsewhere in the body, could predict the onset of temporomandibular joint disorders pain within the next 3 years. It has been reported that widespread pain predicts the onset of dysfunctional temporomandibular joint disorders pain among women, but not its maintenance among either women or men.

However Rammelsberg et al. observed that other body pains contributed to the persistence of masticatory myofascial pain.

Other studies showed that the presence of fibromyalgia can be an independent risk factor for the development of a myofascial TMD.

More recently it has been shown that a clinically manifest temporomandibular disorder occurs more frequently in patients already suffering from FM. Fibromyalgia has been considered far more debilitating with respect to number of pain sites, somatic symptoms, and level of pain intensity than TMD.

FM patients report more functional disability, work difficulty, and overall health dissatisfaction. On the contrary, studies found that select clinical features, including muscle palpation and mouth opening did not differ between FM patients and those with masticatory myofascial pain syndrome. Other studies found that pain type, intensity, description, and quality were similar in both temporomandibular disorders and fibromyalgia patients. Several general health problems have been reported to be equally frequent in FM and TMD patients, and they share common symptoms such as muscle pain, generalized pain sensitivity, sleep and concentration difficulties, bowel complaints, and headaches.

Depression and anxiety are also common in fibromyalgia as well as in temporomandibular disorders patients. Increased pain sensitivity was reported for both patient groups during functional dental investigation, stress and depression, as signs of somatization, were discussed as etiologic cofactors in TMD and FM. Thus, it has been suggested that temporomandibular disorders may be considered a stress-related disorder similar to fibromyalgia and chronic fatigue syndrome. Stress related disorders are characterized by common somatic and psychologic complaints such as fatigue, sleep disturbances, anxiety, and depression. In a study among patients with face painful fibromyalgia the 71% also had a TMD.

Some studies investigating pain sensitivity of TMD patients in extra-trigeminal regions reported increased experimentally evoked pain in non-facial areas, while others failed to detect this phenomenon. It was suggested that generalized up-regulation of Central Nervous System responsiveness to aversive stimulation may constitute a pathophysiologic mechanism contributing to myofascial pain in TMD patients.

Both temporomandibular disorders and fibromyalgia patients have demonstrated greater sensitivity to pain, hyperalgesia, lower pain thresholds in the cold and pressure pain. This could indicate temporomandibular disorders as a precursor of FMS in a continuous spectrum sharing the same underlying pathology. Central nervous system dysfunction and the resultant alteration in pain perception might be the cause for the TMD in FM patients.

Fantoni et al. advocate the inclusion of TMD in the group of Functional Somatic Syndrome (comprising also fibromyalgia) due to the following evidence in literature: TMD share many symptoms with FSS, including chronic pain, headaches, dizziness, nausea, and unrefreshing sleep.

**Conclusions**

Temporomandibular disorders and Fibromyalgia are
closely related disorders that require a multidisciplinary approach. The aim is to prevent all those common risk factors and early interception in order to reduce disability and improve prognosis. It would be desirable the neurologist would send patients to visit gnathological specialist because of the high prevalence of fibromyalgia patients with temporomandibular disorders.

References


30. Barsky AJ, Borus JF. Functional somatic


33. **Clauw DJ.** Perspectives on fatigue from the study of chronic fatigue syndrome and related conditions. *PMR.* 2010; 2:414-30


60. **Carlson CR, Reid KI, Curran SL, Studts J, Okeson JP, Falace D, Nitz A, Bertrand PM.**


Illustrations

Illustration 1

Figure 1: Topographic map for the assessment of systemic tender points used by the American College of Rheumatology for the diagnosis of fibromyalgia syndrome. The calculation of 11 sensitive points on 18 configures a clinical pattern suggestive of the disease.