

Temporomandibular Disorders And Migraine Headache: Comorbid Conditions?

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Abstract

Migraine headache and temporomandibular disorders represent two conditions that affect a significant portion of the population. The relationship between tension-type headache, formerly called musculo-skeletal headache, and myalgia of the masticatory muscles has been known and demonstrated in many patients. However, few studies show a significant association between vascular headache or migraine and temporomandibular disorders. Increasing evidence suggests a potential link in the etiology and course of these seemingly distinct pain disorders. This paper reviews these two conditions and discusses the possible connection between migraine headache and temporomandibular disorders.

HEADACHE

Head pain is one of the ten most common presenting symptoms in general medical practices. Recurring headaches occur in 76% of women and 57% of men. (1, 2) The incidence of headache is 39% at age six and increases to 70% by 15 years of age. (1) It is estimated that headache is responsible for up to one million days of school and one hundred and fifty million days of work missed per year. Headache afflicts a large portion of the population and with its varying severity can result in discomfort, disruption of daily activity, and occasionally debilitating pain. Although about 30% of headache sufferers are periodically functionally impaired, many do not seek medical care.

In the neurology literature, the incidence of tension-type headache, the most prevalent form of headache, is reported to affect over two-thirds of the general population. Migraine headaches affect 18% of women and 6% of men, although its onset is within the first three decades of life. Cluster headache is far less common in the general population, with a prevalence rate of 0.1 to 0.3%. Family physicians and specialists in neurology seek to rule out an organic cause of primary and secondary headache. Unfortunately, the difficulties in distinguishing headaches based on clinical presentation rarely lead to the uncovering of an organic etiologic factor, and rarely lead to the diagnosis of comorbid conditions such as TMD. This results in frequent empiric management of headache without the evaluation of TMD as a potentially treatable comorbid condition. (2)

The incidence of migraine headache peaks between the ages of 30 and 40, decreases with rising income, and is highest among Caucasians. It is estimated that \$1.4 to \$17.2 billion is spent on migraine headache treatment and numerous work days are missed annually making it a significant public health problem. More concerning, is recent evidence linking migraine headache to other more significant neurologic and psychiatric disorders, including epilepsy, stroke, and depression. (3)

Genetic factors play an important role in the development of migraine headaches, with 70-90% of patients having a positive family history for migraine. Traditional concepts regarding the pathogenesis of headache crudely separated this disorder into the muscle contraction theory of tension-type headache and the vascular theory of migraine. Current concepts point to both a neurogenic theory and the role of serotonin in migraine. This neurogenic theory of migraine proposes that the pain originates in the structures of the brain, affecting ascending and descending pathways. In addition, a primary neuronal event is followed by secondary vascular changes whereby, neuronal activation, vascular dilation, and muscle spasm all promote and propagate head pain. The very core of these disturbances appear to be channel dysfunction leading to neuronal hyperexcitability. The complex processes in the pathogenesis of migraine are summarized in Figure 1. Although many forms and variants of migraine headache exist, many of them demonstrate specific phases including a prodrome, aura, headache, and

EPIDEMIOLOGY

Migraine headache and TMD are both characterized by pain in the head and/or face and both conditions are more common in women, particularly in their child-bearing years. Migraine headache affects 17-18% of women and 6% of men; while TMD affects up to 10% of men and up to 14% of women. Women represent greater than 80% of all TMD patients and a majority of headache patients partly because of their increased likelihood of seeking care.

LOCALE OF PAIN

Due to the close anatomical relationship of the muscles of mastication and TMJ to the head and due to the frequency of referred pain, it is sensible to theorize that there is a significant percentage of patients with headache actually have TMD as the major source of their pain. The literature (2, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21) suggests that there is a relationship between both intracapsular articular disorders as well as disorders affecting the masticatory musculature. Migraine pain often manifests in areas of the head including the TMJ and masticatory muscles. DeRossi, (3) et al demonstrated the relationship of TMD and headache, showing a significantly higher prevalence of TMD in patients presenting to a neurology clinic for headache than a control population (11/13 of headache patients versus 1/22 of control patients). These results suggest a subset of patients referred to a neurologist for headache may in fact have a previously undiagnosed TMD as the source of their complaint and a significant subset of patients with migraine headache have TMD as a comorbid disease.

CLINICAL MANIFESTATIONS

According to the International Headache Society (IHS) diagnostic criteria for migraine, patient must have at least five attacks of pain fulfilling the following: 1.) headache attacks lasting 4 to 72 hours 2.) headache with two of the following characteristics: unilateral location, pulsatile quality, moderate or severe intensity, and/or aggravation by physical activity 3.) during headache at least one of the following: nausea and/or vomiting, photophobia and phonophobia and 4.) no evidence of "organic" disorder causing chronic headaches. Most patients with migraine have head pain that at times meets this criteria and at other times meet HIS criteria for tension-type headache.

The IHS criteria for episodic tension-type headache includes ten previous episodes fulfilling the following criteria: 1.) headache lasting from 30 minutes to seven days 2.) at least two of the following pain characteristics:

pressing/tightening, mild or moderate severity, bilateral location, no aggravation by routine physical activity 3.) both an absence of nausea and photo/phonophobia and 4.) no evidence of a symptomatic disorder causing headaches.

The distinguishing feature of the RDC for TMD is its two axis system. Axis I describes clinical conditions and Axis II describes pain related disability. Interestingly, the RDC does not exactly match the HIS classification. The RDC includes 3 groups: Group I consists of muscle disorders, myofascial pain, and myofascial pain with limited opening. Group II includes disk displacements with and without reduction and disk displacement without reduction and with or without limited opening. The last category, Group III includes TMJ arthralgia, arthritis, and arthrosis. Psychosocial characteristics of TMD are placed in a separate axis of assessment.

COMORBID CONDITIONS – A CONVERGING HYPOTHESIS

Interestingly, for reasons that are not completely understood, a number of coexisting conditions have been linked to migraine, including asthma, chronic fatigue syndrome, hypertension, Raynaud's phenomena, stroke, anxiety disorders, depression, and mood disorders. Although these conditions are more common in individuals with migraine, it is unclear what if any causal relationships exist. A few studies in the literature have demonstrated a relationship between temporo-mandibular disorders (TMD) and various types of headache, including vascular headaches. According to Haley, these studies resulted from the clinical observation that patients with TMD also frequently suffer from headache. (18)

The relationship between temporo-mandibular disorders and headache is well recognized in the literature. For instance, some patients diagnosed with either migraine or tension-type headaches, which may be caused by myalgia of the temporalis muscle, will have signs and symptoms consistent with TMD. (16, 18, 22) Strengthening this relationship between TMD and headache is the fact that treatment of TMD has resulted in a decrease of symptoms of headache in some patients. (22) Despite an obvious lack of a well-designed longitudinal study that irrefutably confirms the relationship between headache and TMD, a clinical correlation can be seen. In addition, recent evidence suggests that patients who have a diagnosis of vascular or migraine headache have a higher prevalence of TMD, as a contributing cause of their pain, than the general population. In addition, although

myalgia of the masticatory muscle accounts for a majority of the TMDs, intracapsular disorders are associated with vascular headache compared to controls.

PRESUMED ETIOLOGY

There is a growing belief that primary headaches such as tension-type headache and migraine represent a continuum of the same physiologic process. A convergence hypothesis has been proposed suggesting that successive symptoms experienced clinically actually reflect an escalating pathophysiologic process, beginning with a premonitory period and progressing into tension-type headache and, if left uninterrupted eventually into migraine. In addition, components of a TMD, including bruxism, myalgia, or an intraarticular disorder may represent a mechanical trigger, similar to chemical and psychological triggers, known to precipitate a migraine headache.

BENEFICIAL THERAPIES

The management of TMD and migraine headache have many similarities and treatment of both disorders usually involves a multidisciplinary approach for maximum benefit. Treatment of migraine headache often is classified as either abortive or preventive; patients with frequent attacks often receive both. The pharmacologic options for prophylactic migraine treatment and treatment for TMD include the serotonin reuptake inhibitors, tricyclic antidepressants, muscle relaxants, and antihypertensive medications. Abortive therapy for migraine has evolved significantly over the last decade with numerous new abortive medications and formulations being put to market. Currently, selective serotonin receptor (5-HT₁) agonists are the first line abortive therapy for moderate to severe migraine headache. The more commonly used medications include: sumatriptan, zolmitriptan, rizatriptan, naratriptan, almotriptan, frovatriptan, and eletriptan. Noninvasive therapies for headache include physical therapy, relaxation techniques, and diet modification and now recently the suggestion of interocclusal orthotic treatment to suppress the nociceptive-trigeminal system.

For TMD, pharmacologic and non-pharmacologic therapies are employed. Initial TMD treatment often involves physical and cognitive awareness measures, stress reduction, occlusal orthotic therapy, and medications including tricyclic antidepressants, anxiolytics, and neuroleptic medications commonly used in the treatment of migraine.

CONCLUSION

Migraine headache and TMD show significant overlap in the area or distribution of pain, the gender prevalence and age distribution. The correlation between TMD and headache disorders has always been thought to be a sensible theory based on the close anatomical relationship of the masticatory muscles and TMJ and the frequency and patterns of referred pain of the head and neck. Evidence supporting a close relationship include the increased masticatory muscle tenderness in migraineurs compared and improvement in headache symptoms with traditional TMD treatment. To what extent TMD or migraine play a causal role with one another remains an area of debate. Arriving at a true answer to this question is made more difficult by a lack of consistent definitions of migraine headache, tension-type headache, mixed headache, and TMD. Certainly, interdisciplinary investigation of these pain disorders is crucial to the development of new insight and understanding of these diseases and more importantly in the treatment of these patients.

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