

A retrospective analysis of the headache associated with temporomandibular joint disorder

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Abstract. – BACKGROUND: Headache is a common symptom, that can be extremely disabling, affecting 26 million of patients only in Italy. ICHD-II has reported two categories: “primary headaches” and “secondary headaches”. Temporomandibular joint disorders can lead to a secondary headaches.

AIM: We want to evaluate the prevalence and clinical features of headache among a series of patients having temporomandibular joint disorders and we illustrate the evolution of headache following medical treatment of temporomandibular joint (TMJ) disorders.

MATERIALS AND METHODS: This is a retrospective study carried out on chart review of 426 consecutive patients with various degrees of temporomandibular disorders and treated with medical devices from 2007 to 2011.

RESULTS: Headache was reported by 73 patients (17.14%). Headache was observed in 36 of 51 patients with lock and in 32 out of 130 patients with mandibular deflections (Table I). The remaining 5 patients with headache had articular noise.

CONCLUSIONS: Headache is not a rare finding in a population with temporomandibular dysfunctions and is more often a tension-type rather than trigeminal headache.

Key Words:

Headache, TMJ disorders, Trigeminal pain, Mandibular deflections.

Introduction

Headache can be an extremely disabling condition affecting people in all age group worldwide, leading to job performance and quality of life. It is a common symptom that affects approximately 11% of the adult population¹, and affecting 26 million of patients only in Italy. Population based studies have reported the prevalence of headache in female sex in third decades of life²⁻⁵.

In January 2004, International Classification of Headache Disorder (ICHD-II) has reported 14 groups of headache: first four categories are “primary headaches” including migraine, tension-type headache (TTH), cluster headache and other trigeminal autonomic cephalalgias, and other primary headaches, eight categories of secondary headache, one category for cranial neuralgias and a fourteenth category for headache not classifiable elsewhere⁶.

As previously reported ICHD-II classified the temporomandibular joint disorders to a “secondary headache”, specifically in the group 11, which also brings together headache or facial pain attributed to disorder of cranium, neck, eyes, ears, nose, sinuses, teeth, mouth, or other facial or cranial structures^{3,7-9}.

A review of the Literature shows that previous studies analyzed the presence of temporomandibular disorders in headache patients, but poor data exist concerning patients with temporomandibular disorders suffering from headache^{10,11}.

Teeth, parodontus, neuro-muscular system, bone structures and temporo mandibular joint (TMJ) are the components of stomatognathic apparatus. Well-function of stomatognathic apparatus is due to the equilibrium by the stability of the various components that constitute it. The most common signs and symptoms of temporomandibular disorders are: temporomandibular joint sounds, impaired movement of the mandible, limitation in mouth opening, preauricular pain, facial pain, headaches and jaw tenderness on function⁶. All conditions like injuries, trauma, malformations, inadequate prosthetic devices, partial edentulia, prematurity, stress, psychological disorders, TMJ ligament tenderness, can cause the interruption of this physiological equilibrium, lead to dysfunction of articular structures and, consequently, headache¹²⁻¹⁴.

The aim of this analysis is to evaluate the prevalence and clinical features of headache among a series of 426 patients having temporomandibular disorders and to illustrate the evolution of headache following medical treatment of temporomandibular disorders.

Materials and Methods

This is a retrospective analyses based on chart review of 487 consecutive patients treated for temporomandibular disorders, 426 patients of the series recived a medical treatment. Patients of our series had various degrees of temporomandibular disorders and referred at the Maxillo-Facial Surgery ambulatory of Umberto I Polyclinic of Rome, "Sapienza" University of Rome, Italy, between January 2007 and January 2011.

A total of 426 patients with various degrees of temporomandibular disorders treated medically from 2007 to 2011 were enrolled in the study. Collected data include patients' age at the time of disorders, gender, presenting signs and symptoms, final diagnosis, type and characteristics of the treatment performed, radiological findings and post-treatment results.

Patients were 305 females (71.60% of the sample) and 121 males (28.40% of the sample), with an average age of 34,6 years including between a minimum of 17 and a maximum of 73. All patients of our series underwent to physical examinations and instrumental analysis.

Clinical examination was performed at first evaluation and at follow-up controls, and was based on intraoral examination, assessment of eventual mandibular translations or clicking, measurement of mouth opening and the estimation of the severity of the preauricular pain, the facial pain, the headaches and jaw tenderness. The assessment of pain was evaluated by VAS system (Visual Analogue Scale).

Instrumental analysis are carried out pre and post-treatment and were Rx ortopantomography and Rx stratigraphy and/or TC Cone Beam of bilateral temporomandibular joints.

Furthermore, patients were interviewed at first examination on their clinical history and were asked to report subjective symptoms as, local pain, bruxism behaviour and headache. Subjective symptoms were investigated during follow-up, also.

Data from clinical evaluations, instrumental analysis and subjective reports were collected in patients' charts, together with post-treatment follow-up findings.

Charts were retrospectively reviewed in order to assess the prevalence of headache in a population of patients affected by temporomandibular joint disorders and to analyze type and severity of temporomandibular joint disorders-related headache and its relation with different patterns of temporomandibular joint disorders.

Results

Etiology of temporomandibular joint disorders in our 426 patients' series was due, for the majority of cases to malocclusion caused by inadequate dental alignment or partial edentulia or inadequate dental prosthesis with the 82.63% (352 patients), followed by malocclusion caused by maxillo-mandibular malformations in the 7.51% of cases (32 patients), the 7.28% of indirect trauma (31 patients) and, finally, the 2.58% of direct temporomandibular joint trauma (11 patients).

In the 426 patients of our series were found disorders, in 475 temporomandibular joints since in 49 out of 426 patients were found a bilateral disfunction. Objective findings of temporomandibular disorder in patients of our series the 57.75% were articular noise (246 patients, corrispondig to 288 sides), the 30.51% were mandibular deflections (130 patients) and the 11.74% of condilar lock (50 patients) as reported in Table I.

Strumental analysis revealed severe condilar displacement in 182 (42,72% of the sample) temporomandibular joints and moderate condilar displacement in 293 (68,77% of the sample) temporomandibular joints.

Table I. Relation between objective signs of TMD and persistence of headache.

Condilar lock

50 patients
36 patients with tensive cephalaea

Mandibular deflections

130 patients
25 patients with tensive cephalaea,
7 patients with trigeminal headache

Articular noises

246 patients
5 patients with trigemnal headache

In 47 patients (11.03%) of our analysis, symptoms of temporomandibular disorders occurred between 1 and 6 months before our first evaluation, in 223 (52.35%) patients temporomandibular disorders occurred 12 months before, in 101 patients (23.71%) 2 years before and in the remaining 55 patients (12.91%) temporomandibular disorders appeared three years before our first evaluation, as shown in Table II.

The therapy of condyle-disc incoordination and muscle disorders should aim at recovering the restrictions biomechanical joint and occlusion, and neuromuscular rehabilitation, because the achievement of this objective will lead to the recovery of the morphofunctional dental apparatus and the well-being of all components of compensation related to these pathologies.

The main treatments used to the recovery of well-being stomatognathic stable include occlusal therapy and intra-articular surgical therapies.

Treatment options to support the main treatments include: inadequate education and modification of lifestyle habits of the patient, drug therapy, physiotherapy, cooperation with other specialties.

61 patients of 487 examined (12.56%) received a surgical treatment. Treatment of temporomandibular disorders in the remainder 426 patients was based on bite appliance which was built on Rx stratigraphy and/or TC cone beam images to obtain an adequate condilar replacement and a correct relation between condyle and glenoid fossa.

Headache was reported by 73 patients (17.14%). In 12 out of 73 trigeminal pain was referred (16.44%) whereas in 61 patients a muscular cephalgia was found (83.56%).

Direct correlation between headache and different temporomandibular disorders patterns was found. Headache was observed in 36 (49.31%) of 51 patients with lock and in 32 (43.83%) out of 130 patients with mandibular deflections (see Table I). The remaining 5 patients (6.85%) with headache had articular noise.

As regards correlation between headache and time of presentation of temporomandibular disorder,

33 patients out of 73 (45.21%) had temporomandibular disorders 3 years before our first evaluation, in 28 (38.35%) temporomandibular disorders occurred 2 years before our first evaluation and in the remaining 12 patients (16.44%), who had trigeminal headache, temporomandibular disorders appeared one year before (Table II).

Following the application of bite, all the 73 patients with headache reported a decrease of headache disturbances; the decrease in severity of headache was reported after two or three weeks of therapy with bite. Regarding the type of headache as noted in our study, the 83.56% of patients suffering from tensile cephalgia and the 16.44% from trigeminal headache. Since this findings, the whole cases of tensile-cephegia in our analysis were observed in patients suffering of severe condilar displacement having temporomandibular disorders occurred since at least 2 years and showing lock or severe mandibular deflections. As what regards trigeminal headache, the whole cases of our analysis were found in patients suffering of temporomandibular disorders occurred an year before and having temporomandibular joint noise or mandibular deflection.

Discussion

The overlap between headache and temporomandibular disorders has been assessed over the years in various clinical experiences. However, studies generally focussed on the prevalence of temporomandibular disorders in headache populations, rather than on the prevalence of headache in temporomandibular disorders populations.

In a study aimed at investigating the coexistence of headache and temporomandibular disorders, Ballegaard et al¹⁵ examined 99 headache patients. temporomandibular disorders was reported in 55 patients (83.64% females and 16.36% males), and facial pain in 82 patients (73.3% females and 20.7% males). temporomandibular disorders diagnosis mainly concerned cases of myofascial pain (46.9%), followed by joint disk dis-

Table II. Relation between period of occurrence of TMD and presence of headache.

TMD occurred between 1 to 6 months prior	TMD occurred from 1 year prior	TMD occurred from 2 years prior	TMD occurred from 3 years prior
47 patients –	223 patients 12 patients with trigeminal headache	101 patients 28 patients with tensile cephalgia	55 patients 33 patients with tensile headache

placement (7.1%). The remaining cases included arthralgia, osteoarthritis and osteoarthritis.

In a study conducted by Schokker et al¹⁶ approximately half of the patients with recurrent headache had reported pain when asked to open the mouth as wide as possible, whereas a high proportion of headache patients had reported tension of the masseter and temporal muscles.

Glaros et al¹⁷ examined the correlation between headache and temporomandibular disorders, focussing on dental occlusion. In the examined headache cases, these Authors evidenced a significant increase in the frequency and extent of pre-contacts, more masticatory muscle tension, and more pain in the face and other parts of the body.

Graff-Radford¹⁰ studied the correlation between temporomandibular disorders and headache, and vice versa, and observed that possible causes included temporomandibular joint inflammation, temporomandibular joint arthropathy and joint disk displacement.

In our retrospective study, we assessed the prevalence and the different types and grades of headache, together with the evolution of cephalgia after temporomandibular disorders treatment in a series of patients with temporomandibular joint dysfunctions.

In our study, temporomandibular disorders-related headache was observed in 73 out of 426 patients (17.14%), and was generally shown to be a tension-type (83.56% of all headache cases) rather than a trigeminal headache (16.44% of all headache cases). The presence of headache in our patients' series was shown to be related to the severity of condylar displacement, to significant masticatory muscle contractures and to temporomandibular disorders persisting for 2 years or longer.

Conclusions

Temporomandibular disorders-associated headache in a population with temporomandibular dysfunctions is not a rare finding. Headache is more often a tension-type rather than trigeminal headache. The temporomandibular disorders-related headache seem to be associated to the age of occurrence of articular symptoms and to the severity of clinical and diagnostic results, although multiple individual variations, such as individual susceptibility, pain threshold and perception of headache disorders, introduce a variable into the correlations being observed.

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