GLOBAL YEAR AGAINST OROFACIAL PAIN
OCTOBER 2013 – OCTOBER 2014

Temporomandibular Disorders

Introduction

Temporomandibular disorders (TMD) encompass a group of musculoskeletal and neuromuscular conditions that involve the temporomandibular joint (TMJ), the masticatory muscles, and all associated tissues. Pain associated with TMD can be clinically expressed as masticatory muscle pain (MMP) or TMJ pain (synovitis, capsulitis, osteoarthritis). Chewing or other mandibular activity usually aggravates the musculoskeletal pain. TMD pain can be (but is not necessarily) associated with dysfunction of the masticatory system (clicking or locking of the TMJ and limitation of jaw movement).

Epidemiology and Economics

TMD-related facial pain has been reported in 9–13% of the general population (with a female: male ratio of 2:1), but only 4–7% seek treatment (4 times more females). Signs and symptoms peak among 20–40-year-olds. Progression to severe and/or chronic pain is associated with greater psychosocial distress, sleep disturbances, and comorbidities. TMD-related pain can affect daily activities, physical and psychosocial functioning, and quality of life.

Disabling TMD pain results in significant loss of work days and in other health-care-related costs.

Pathophysiology

Many aspects of the etiology of TMD are unclear. In contrast to dental/occlusal causes, for which supporting evidence has been inadequate, there is definite support for a biopsychosocial and multifactorial background, illustrating the complex interaction between biological (e.g., hormonal) mechanisms, psychological states and traits, environmental conditions, and macro- and microtrauma.

In MMP, experts propose a complex interaction between environmental, emotional, behavioral, and physical factors, including overloading (parafunctions such as clenching during waking hours and bruxism during sleep), (micro-) trauma, and release of inflammatory mediators and neuropeptides in muscles, which can sensitize the peripheral and central nervous systems. In conjunction with altered pain-regulating mechanisms (also influenced by female hormones), such factors may lead to localized or more generalized muscle pain, which is often associated

with comorbidities. Recent articles have highlighted the cultural effects of persistent TMD pain on patient behavior, as well as genetic factors (*COMT* gene haplotypes).

TMJ arthralgia may result from trauma and from intrinsic and extrinsic overloading of the TMJ (reportedly from tooth clenching) that may overcome the adaptive capacity of the joint tissues. Alternatively, the adaptive capacity of the TMJ may be reduced by intrinsic factors such as reduced blood supply and inadequate nutrition. Genetics and gender have also been implicated in the pathophysiology of osteoarthritis. The production of free radicals, proinflammatory and nociceptive neuropeptides, enzymes, bone morphogenetic proteins, and growth factors will lead to inflammation, pain, and progressive tissue changes.

Clinical Features

MMP is a regional, dull, aching pain, most prominent in the jaw-closing muscles, which can occur at rest and may be aggravated during mandibular function. Pain may be more pronounced in the morning or evening and ranges from mild to severe in intensity. Reported associated symptoms are limitation of movement, headache, fullness of the ear, and neck pain, but cause-and-effect relationships have not yet been established. The regional disorder of MMP should be distinguished from MMP that occurs as part of a generalized muscle pain disorder such as fibromyalgia.

TMJ arthralgia is a more localized and sharp pain of moderate to severe intensity, localized to the TMJ and surrounding tissues and radiating mostly to the ear region. The pain is aggravated during loading and functioning of the joint and may limit normal movement and function. TMJ pain is often associated with a displaced or dysfunctional articular disk causing joint locking, which may be an additional cause of limitation of movement. TMJ osteoarthritis may be part of generalized arthritis and is accompanied by crepitation.

If chronic pain develops, both MMP and TMJ arthralgia may be accompanied by central sensitization and psychological problems such as depression, somatization, and anxiety.

Diagnostic Criteria

The Guidelines of the American Academy of Orofacial Pain (2013) and the Diagnostic Criteria (DC-TMD, in press) suggest the following criteria:

MMP: A complaint of muscle pain in the jaw, in the temple, in the ear, or in front of the ear that is affected by jaw movement, function, or parafunction. Replication of this familiar pain occurs

with provocation testing of the masticatory muscles (i.e., palpation of the temporalis or masseter muscle(s); OR with maximum unassisted or assisted opening. Limitation of mandibular movement(s) secondary to pain may be present.

TMJ arthralgia: A complaint of joint pain that is affected by jaw movement, function, or parafunction. Replication of this familiar pain occurs with provocation testing of the TMJ (i.e., palpation of the lateral pole or around the lateral pole) OR with maximum unassisted or assisted opening, right or left lateral movements, or protrusive movements.

Psychosocial factors are rated by means of a pain drawing for pain locations and comorbidities, the Graded Chronic Pain Scale (GCPS) for pain intensity and physical function, the Jaw Function Limitation Scale (JFLS) short-form for limited function, the Patient History Questionnaire-4 (PHQ-4) for depression and anxiety, and the Oral Behavior Checklist for parafunction.

Diagnosis and Treatment

The gold standard for a pain-related TMD diagnosis is the combination of history and clinical examination. Except for imaging, technical examinations (e.g., electromyography or occlusal analysis) are not warranted. The symptoms are usually self-limiting, with a benign natural course.

Management aims at providing the optimal circumstances for healing and adaptation to take place. Noninvasive, reversible therapies that fit in the biopsychosocial approach include:

- Education of the patient, active self-care, follow-up

- Physical therapy, physical self-regulation programs

- Intraoral occlusal appliances

- Medication (analgesics, nonsteroidal anti-inflammatory drugs)

In patients with chronic TMD, these therapies must be accompanied by:

- Psychological support, e.g., cognitive-behavioral therapy, relaxation therapy

- Low-dose tricyclic antidepressants

In patients with persistent TMJ arthralgia, arthrocentesis might be considered, but TMJ surgery is rarely, if ever, indicated in the scope of TMD pain treatment.

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