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MANAGEMENT OF TEMPOROMANDIBULAR DISORDERS IN CHILDHOOD AND ADOLESCENCES

ÇOCUK VE ERGENLERDE TEMPOROMANDIBULAR BOZUKLUKLARIN YÖNETİMİ

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Abstract

Most of studies showed that the temporomandibular disorders (TMD) caused by multifactorial aetiology. Oral parafunctions, malocclusion, joint anatomy, pathophysiology, genetic, psychosocial aspects (emotional status) and trauma are the known contributing factors. Population-based studies report that 10% to 15% of adults experience TMD, and it is more commonly encountered in women. Multidisciplinary approach including multiple specialties, comprising general dentistry, orofacial pain, physical therapy, surgery, orthodontics and psychiatry could be necessary to fully address the problem from all perspectives. Aims of treatment are decreasing pain, increasing function and opening level of mouth, preventing further joint damage, improving quality of life.

Keywords: *temporomandibular disorders, bruxism, children.*

Özet

Birçok çalışmalar, temporomandibular bozuklukların (TMD) etiyolojisinin multifaktöriyel olduğunu göstermiştir. Oral parafonksiyonlar, maloklüzyon, eklem anatomisi, patofizyoloji, genetik, psikososyal yönler (duygusal durum) ve travma temporomandibular bozukluklara sebep olan faktörlerdir. Nüfus temelli çalışmalar, yetişkinlerin % 10 ila % 15'inin TMD yaşadığını ve kadınlarda daha sık karşılaşıldığını bildirmektedir. Genel diş hekimliği, orofasiyal ağrı, fizik tedavi, cerrahi, ortodonti ve psikiyatri gibi farklı uzmanlık dallarını içeren multidisipliner bir yaklaşım, sorunu tüm açılardan tam olarak ele almak için gerekli olabilir. Tedavinin amacı ağrıyı azaltmak, fonksiyonu arttırmak ve ağzın açılma seviyesini arttırmak, daha fazla eklem hasarını önlemek, yaşam kalitesini arttırmaktır.

Anahtar Kelimeler: *temporomandibular bozukluklar, bruksizm, çocuk.*

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OVERVIEW / GENEL BAKIŞ

Temporomandibular disorders (TMD) are a universal term used for a number of specific signs and symptoms including the masticatory muscles, the temporomandibular joint (TMJ) and related structures (1-3).

Aetiology

Several studies showed that the TMD caused by multifactorial aetiology. Oral parafunctions, malocclusion, joint anatomy, pathophysiology, genetic, psychosocial aspects (emotional status) and trauma are the known contributing factors. Oral parafunctional habits are commonly observed in the general population and can lead to destruction to dentition, masticatory system and/or joints when they exceed the patient's physiological tolerance and the physical tolerance of masticatory system (4-8). Oral habits that can be detrimental to oral health comprise a number of behaviours, such as cheek and tongue biting, teeth clenching or grinding, thumb sucking, bruxism, biting foreign objects, nail biting, unusual postural habits, leaning on the arm, crushing ice and ice pops, occupational-related activities, eating seeds, gum chewing vs. (9).

It is generally believed that a variation of biological, psychological, and social factors may decrease the adaptive capacity of the masticatory system, thus resulting in TMD (10). TMD pain has a biopsychosocial aetiology, in which both the somatic factors, that is, biological factors as well as the disease impact factors, that is, psychosomatic and social factors are combined (11). Stress is one of the most studied psychosocial factors. The effects of stress are considered to be damaging to the homeostasis of the organism and may be associated with numerous diseases. Childhood stress is similar to that of the adult, with some clinical manifestations. It is possible that different forms of stress have different effects on the child and adolescences (12).

Bruxism should not be measured as a disorder in otherwise healthy persons, but rather as behaviour, a physiological phenomenon, that can be a risk factor for certain clinical significances (13). But bruxism is a motor disorder related with grinding and gnashing of the teeth that increases with stress (14, 15).

Children with juvenile idiopathic arthritis (JIA) have a high prevalence of TMJ involvement and may have other involved joints. Characteristically, JIA includes increased of inflammation leading to early degenerative changes of joint and potential occlusal variations (16). TMD such as crackle, clicking sound and disc disarticulation in patients with JIA can be responsible for severe modifications as convex facial morphology, hypoplastic condyles and retrognathia (17).

Epidemiology

Population-based studies report that 10% to 15% of adults experience TMD, and it is more commonly encountered in women (18). Marpaung et. al 2018, reported that from parents or legal guardians of the 545 children aged 7-12, the prevalence of pain-related TMD was 23.4% and the prevalence of self-reported pain-related TMD among the 812 adolescents aged 13-18 years was 36.9% (19).

In a systematic review, concerning signs and symptoms, studies reported prevalence's varying from 3 to 53% for TMJ tenderness, from 0.5 to 81% for muscle tenderness, from 8 to 48% for joint sounds, from 2

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to 63% for restricted mouth opening, and from 3 to 20% for the presence of deviations of the mandible (20). Sönmez et al. stated that the total prevalence of signs (TMJ tenderness, TMJ sounds, muscle tenderness, limited mouth opening) and symptoms of TMJ dysfunction (TMJ pain for the duration of chewing and mouth opening, limited of the jaw opening and TMJ sounds) in the studied population was 68% (68% in girls and 68% in boys) in mixed dentition and 58% (61% in girls and 56% in boys) in permanent dentition (21). In another study showed that TMD prevalence was about 4% in pre-pubertal children and almost 13–14% in those subjects who had completed pubertal growth. There were no remarkable gender differences. It should be noted that the observed frequency of TMD pain was much higher in pre-pubertal girls than the rate predicted by the model. This is likely due to the minor sample size for pre- pubertal girls (22).

Diagnosis

TMD describe a various group of pathologies affecting the TMJ, the muscles, or both, and are characterized by a typically defined triad of clinical signs: muscle and/or TMJ pain; TMJ sounds; and restriction, deviation, or deflection of the mouth opening way (23). The Research Diagnostic Criteria for Temporomandibular Disorders (RDC/TMD) (Axis I and Axis II) was a model system when it was published in 1992, but the authors accepted that it was only a beginning and that further research was needed to develop its validity and scientific value. The following recommendations represent an evidence-based new RDC/TMD intended for immediate implementation in clinical and research settings. The twelve common TMD include myofascial pain, myofascial pain with referral, myalgia, local myalgia, arthralgia, degenerative joint disease, four-disc displacement disorders, subluxation, and headache attributed to TMD (24, 25). Research Diagnostic Criteria for Temporomandibular Disorders (RDC/ TMD) protocol has 2 parts: axis I focus on TMD diagnoses and axis II focuses on biobehavioural factors. The objective of axis II is to afford diagnostic criteria for TMD with clear, basic, reliable, and valid operational descriptions for the history, examination, and imaging techniques of physical analyses (16).

In addition, Child Behaviour Checklist (CBCL) questionnaire can be used to detect oral parafunctions habits causing TMD and to evaluate emotional stress. The CBCL that has been used to define the psychosocial status of raise children and adolescents. It should be completed by the child's parent or child's caregiver who has had the child for a period equal to or more than six months. CBCL procedures not only the emotional, behavioural and physical problems in children from 6 to 18 years old, but it also reports the teenager's social ability such as group and peer relationships, as well as family relationships (26).

Treatment

Multidisciplinary approach including multiple specialties, comprising general dentistry, orofacial pain, oral medicine, physical therapy, surgery, orthodontics, and psychiatry could be necessary to fully address the problem from all perspectives. The minimum invasive and maximum reversible treatments should be tried first. Only after a failure to modify the disease process and clinical signs should more invasive and often non reversible treatments be started. Aims of treatment are decreasing pain, increasing function and opening level of mouth, preventing further joint damage, improving quality of life. (27). The techniques used to achieve these goals could be very variable, such as physical therapy (patient education and self-care), exercises, biofeedback, relaxation, cognitive-behavioural interventions, orthodontics, occlusal adjustment, occlusal splints, pharmacotherapy including intraarticular injections, and TMJ surgery, tissue engineering (28-31).

e-ISSN 2667-7288 Vol 2, Issue 1, (2020) Review Article / Derleme Makale

Home physical therapy (HPT) for TMD contains patient education, self-care treatment, lifestyle modification and awareness about the provoking factors. Specially, it consists of active jaw movements, stretching trainings and correction of head and body posture. It is quite simple and little budget compared with other therapies and ensures the active involvement of individual (32). HPT has also been shown to provide relief of masticatory muscle and joint pain (33). Patient education comprises educating patients and their parents in basic and clear language about multiple areas: the nature of the disease; beginning, predisposing, and continuing factors, management modalities, anatomy of the TMJ, goals of therapy. A personalised home-care plan should be fabricated, consisting of nutritional and habit modification (eg, minor bites, bilateral chewing), use of cold and/or warm compresses, prevention of habits that overwork the masticatory muscles and TMJ (eg, chewing gum, clenching, jaw or tongue thrusting and other parafunctional behaviours) (34).

Exercise therapy contained within muscle stretching, massage of painful muscles, gentle isometric tension exercises against resistance, correction of body posture, guided opening and closing movements, manual joint distraction, disc-condyle mobilization, and relaxation techniques. A combination of exercise and physical therapy, correction of body posture, and relaxation techniques significantly alleviates jaw pain, controlled movement, and impairment. This combination seems to be useful treatment for the symptoms of clinical dysfunction in osteoarthritis of the TMJ (35).

Electrophysical modalities, for example shortwave diathermy, ultrasound, laser, and transcutaneous electrical nerve stimulation (TENS) are generally performed in the medical situation. Electrophysical modalities are intended to decrease inflammation, stimulate muscular relaxation and increase blood flow by modifying capillary permeability. Therapies with electrophysical modalities accomplished early in the course of a TMD are beneficial in reducing symptoms (36).

The mini wireless biofeedback device has projected an effective, original and useful method for bruxism therapy when contrasted with occlusal splint. The overall episodes and usual duration were decreased remarkably after 6 and 12 weeks therapy. Wakefulness of clenching or grinding of teeth can improve the episodes of bruxism activities itself after several weeks exercise and learning in bruxers (37).

Treatment of patients suffering from TMD of mostly myogenous origin by means of occlusal adjustment alone must be considered as ineffective. The treatment with stabilization splints used at night for patients suffering from TMD of both arthrogenous and myogenous origin seems applicable. A stabilization splint used day and/or night is not more effective than a control splint in patients suffering from myofascial pain (28). In clinical practice, it is generally assumed that occlusal splints have therapeutic significance in the treatment of TMD. In a study evaluated by Kuttila et. al, the short-term (10-week) efficiency of a stabilization splint in patients with recurrent secondary otalgia and active TMD treatment need using a randomized, controlled, double-blind design. After 10 weeks' treatment, the results indicate that the use of a stabilization splint is helpful with regard to secondary otalgia and active TMD treatments need (38). The most common orthotic jaw appliance types are stabilization appliances of soft, hard or dual acrylic, anterior positioning appliances and anterior bite appliances (39). Occlusal appliances are commonly used in the treatment of patients with TMD and their effectiveness in reducing symptoms has been reported to vary between 70% and 90%. The stabilization appliance could be recommended as a short-term treatment modality for TMD of mainly myogenous origin. It is investigators' belief that patients with myofascial pain in general will benefit from stabilization appliance therapy unless the patient's general health has an influence that is too heavy on the myofascial pain (40). Unlike the adult patients, only a few studies have evaluated the effectiveness of the

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orthotic jaw appliance modality in the paediatric patients for the managing of TMD. Hard material splint may inhibit with the craniofacial and odontogenic development and growth in children with primary and mixed dentition. Present evidence suggests short-term use of soft material splint, such as soft stabilization appliances, with even bilateral stable contacts with the opposite dentition to diminish adverse tooth movements in children with primary and mixed dentition (34, 41).

Pharmacologic therapy is intended to reduce pain and promote enhancement in function and quality of life. The data on paediatric management of TMD with medications are limited. However, data from the adult people and from joints other than the TMJ can be extrapolated. The pharmacologic agents used in the management of TMD include nonsteroidal anti-inflammatory drugs (NSAIDs) and corticosteroids; acetaminophen; hyaluronic acid; opioid therapy and adjunctive agents, such as muscle relaxants, anti-depressants, anticonvulsants and benzodiazepines (34, 42, 43). The minimum treatment duration was 7 days, maximum 12 weeks and median 4 weeks and it may be too short an evaluation period for a chronic condition (44).

SUMMARY / SONUÇ

Management of TMD contains of a combination of patient education, home self-care, physiotherapy, biobehavioural medicine, orthotic jaw appliance therapy, pharmacotherapy, and surgery. Surgery is considering only treating a structural anatomic disorder that is creating pain and dysfunction. The objective is to increase function, decrease pain and expand quality of life.

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