TEMPOROMANDIBULAR DISORDERS & PHYSIOTHERAPY - A REVIEW

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ABSTRACT

Temporomandibular disorders are defined as a set of disorders involving masticatory muscles, TMJ, and adjacent segments. These disturbances affect the dynamic balance of the structures, leading to a series of signs and symptoms typical of this dysfunction. In present article we studied the various effects of physiotherapy in management of these patients.

Key words: Temporomandibular disorders, Temporomandibular joint, Physiotherapy.

I. INTRODUCTION

Temporomandibular joint (TMJ) is regarded as the most complex structure of the human body. TMJ performs rotational and translational movements due to the double articulation of the temporal bone condyle. The fact that TMJ presents two joints (condyles) connected to the mandible requires that they work synchronously between dental occlusion, neuromuscular balance and the joint itself.¹ This joint is vulnerable to functional or pathological alterations, leading to disorders such as temporomandibular disorder (TMD). TMD is defined as a set of disorders involving masticatory muscles, TMJ, and adjacent segments. These disturbances affect the dynamic balance of the structures, leading to a series of signs and symptoms typical of this dysfunction. Face pains, TMJ and/or masticatory muscles and headache are the main ones. Other less frequent symptoms that may be present are manifestations.²

It is mainly characterized by pain and restricted jaw movement, with pain being the most common symptom and the most frequent reason for seeking treatment.³ In the literature, the treatments available for TMD include pharmacological management, oral appliances, occlusal equilibration, physical therapy, TMJ surgery, bio-behavioral treatments and patient education.⁴ Physical therapy (PT) for TMD includes self-care treatment, patient education, lifestyle modification and self-awareness about the aggravating factors. Specifically, it involves active jaw movements, stretching exercises and correction of body and head posture. It is relatively simple, incurs little cost compared with other treatments and ensures the active involvement of patients.⁴

Up to 70% of TMD patients suffer from pathology or malpositioning of the TMJ disc, termed “internal derangement” (ID). While disease progression is poorly understood, the primary pathology appears to be a degenerative condition, known as osteoarthritis (OA) or osteoarthrosis, depending on whether inflammatory or non-inflammatory states exist, respectively.⁵ In a study of patients presenting unilateral TMD pain symptoms during function, palpation, and assisted or unassisted mandibular opening (n=131), it was reported that 54.2% of individuals showed osteoarthritis in the affected joint. Asymptomatic patients, whose discs are identified by magnetic resonance imaging (MRI) in the “normal” anatomical position, show minimal morphological change in the condyle and articular eminence in light of normal adaptive processes. In contrast, substantial osseous change is observed in symptomatic patients with ID.⁶ Osteoarthritic changes observed during TMD include deterioration and abrasion of articular cartilage, and thickening and remodelling of underlying bone. In TMD patients, it is readily apparent that once joint breakdown commences, OA can be crippling, leading to morphological deformity and functional obstruction.⁷

Etiology

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Remodelling of the load-bearing joints is an essential adaptation process needed for appropriate stress distribution and function. It has been established that, while progressive and regressive, mechanically-induced remodelling is a normal process early on. When the capacity for the joint to remodel has been exceeded, remodelling merges into osteoarthritis. Characteristic osteoarthritic changes observed in the TMJ include alterations in shape and overall size of joint components, specifically, flattened fossa, less pronounced articular eminence, decreased condylar volume and thickened disc. Degenerative remodelling present in pathologic TMJs may result from either decreased adaptive capacity in the articulating structures or from excessive or sustained physical stress to the articulating structures. Important to our understanding of TMD etiology, such degenerative changes have been correlated with internal derangement of the TMJ disc.

**Diagnosis**

Although the onset of TMD is poorly understood, Wilkes has established a five-stage system for classifying the progression of internal derangement based on clinical and imaging criteria. A schematic depicting anterior disc displacement, as described by Wilkes’ stages, may be seen. In Stage I, clinical observations include painless clicking early in opening and late in closing with unrestricted mandibular motion. Imaging observations indicate slight forward displacement of the disc, with passive incoordination as the disc returns to the “normal” anatomical position (ID-reducing). Osseous contours appear normal. In Stage II, symptoms include occasional pain with clicking, intermittent locking, and orofacial pain. Imaging shows slight deformation of the disc and slight forward.

**Management**

Physical therapy has also been shown to provide relief of masticatory muscle and joint pain. PT for TMD includes TMJ mobilization, soft tissue mobilization of painful muscles, active or passive muscle stretching exercises, gentle isometric tension exercises against resistance and guided opening and closing jaw movements. These relatively reversible, non-invasive treatments are intended to decrease muscle spasm alter jaw opening–closing patterns and improve coordination of the muscles of mastication. Various reports have suggested that PT is a viable and useful approach towards the management of TMD.

Important aspect in the treatment of TMD is the frequency and duration of physiotherapy sessions. Considering the number of sessions, in seven studies were performed. However, in the study by Freitas et al., the author felt the need for a larger number of sessions, totaling 15 sessions. This shows that most authors agree with the number of sessions performed.

**Non-invasive management**

The non-invasive modalities implemented most commonly include physical therapy, occlusal splints and/or adjustments, and pharmacologic. Beginning first with physical therapy, electrophysical modalities and manual/exercise techniques are used to relieve pain in the joint and masticatory muscles, and improve range of motion. Physical therapists may complement these techniques with behavioural changes by drawing awareness to the patient’s posture, diet, and stress-related habits. Electrophysical modalities include transcutaneous electric nerve stimulation (TENS), ultrasound, and laser. Such modalities are implemented to reduce inflammation, increase local blood flow, and promote muscle relaxation. Current research does not point to any significant decrease in pain in electrophysiologically treated patients.

In fact, one study of 23 bruxists showed a significant increase in range of motion and a decrease in muscular activity with muscular awareness relaxation training over the TENS treatment group. Manual therapies designed to increase mobility and reduce pain have shown promise and are often used in conjunction with exercise techniques. Such exercise techniques work to strengthen and improve mobility in the masticatory and cervical spine muscles. Furthermore, these techniques offer the potential to “re-teach” and rehabilitate the musculature. This observation is especially noted in patients exhibiting stress-related habits. Along with exercise techniques, postural exercises may aid in the alignment of the craniofacial system. Intended to relieve pain associated with TMD and improve range of motion, physical therapy treatment plans must be patient-specific and may involve a combination of modalities. Also non-invasive, occlusal splints and occlusal adjustments work to establish balance in the occlusion and TMJs. The occlusion, or bite position, is a third and important element in the joint system and is the element often addressed by general dentists. Adjustments and splints may be used to achieve the most stable and least joint-traumatizing bite position. The ultimate goal of splints and adjustments is to minimize pain.
in the joint and masticatory muscles by establishing stability. Furthermore, as reviewed by Ahmad, splints may be used to control bruxism, which has been associated with tooth attrition.

Minimally Invasive

Minimally invasive modalities for management of TMD symptoms include sodium hyaluronate and corticosteroid injections, arthrocentesis, and arthroscopy. Injections of corticosteroids and high molecular weight sodium hyaluronate in the superior joint space are designed to treat osteoarthritic symptoms. With research indicating both regenerative and degenerative responses to such injections, their use remains controversial. The pathophysiology of the disease indicates there may be more significant potential for these injections in early stages of degeneration when inflammation first begins to exacerbate tissue catabolism.

Invasive

For the 5% of TMD patients whose nonsurgical methods fail, open joint surgery may be necessary to restore mandibular motion and mitigate orofacial pain. Most commonly, open joint surgery may include discectomy, reshaping or reconstruction of the articulating surfaces, and implantation of autologous or alloplastic materials.

II. CONCLUSION

Physiotherapy is widely used therapy in patients with TMDS. Its role in management has been well established.

REFERENCES