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Management of Masticatory Myofascial Pain Syndrome. An Review

Shafie Ahamed*

Professor and Head of the Department, Department of Conservative Dentistry and Endodontics, Rajah Muthiah Dental College and Hospital, Tamilnadu, India

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***Corresponding author:** Shafie Ahamed, Professor and Head of the Department, Department of Conservative Dentistry and Endodontics, Rajah Muthiah Dental College and Hospital, Tamilnadu, India

Abstract

Masticatory Myofascial pain syndrome is a soft tissue inflammatory condition that causes acute or chronic localized myogenous pain and stiffness. It present similarly to odontogenic pain or refer pain to the eye brows, ears, temporomandibular joints, maxillary sinus ,tongue and hard palate. Unlike muscle spasms, which are generalized increased stiffness of the entire muscle, myofascial trigger points are located within stretched muscle fibers (taut bands) that when compressed cause referred or local pain. More common etiology are 1. Injury 2. Continuous muscle stress. 3. Fibromyalgia, 4. Emotional stress and tension. 5. Joint Dysfunctions such as temporomandibular disorders. Treatment Includes Education, Self-care, Physical therapy, Intraoral appliance therapy, Short term Pharmacotherapy, Behavioral therapy and Relaxation techniques. There is evidence to suggest the combining treatment produces a better outcome . A multi-professional approach (dentists, physicians, psychologists, physiotherapists, chiropractors, and massage therapists) should be used to regain range of motion, deactivate trigger points, and maintain pain relief.

Keywords: Masticatory Myofascial; Pharmacotherapy; Maxillary Sinus; Temporomandibular Disorders; Myofascial Trigger

Introduction

Masticatory Myofascial Pain Syndrome is a soft tissue inflammatory condition that causes acute or chronic localized myogenous pain and stiffness. It present similarly to odontogenic pain or refer pain to the eye brows, ears, temporomandibular joints, maxillary sinus, tongue and hard palate [1]. Unlike muscle spasms, which are generalized increased stiffness of the entire muscle, myofascial trigger points are located within stretched muscle fibers (taut bands) that when compressed cause referred or local pain [2]. Although the exact etiology of MMPS is unclear, recent research has improved our understanding of factors that contribute to the development and progression of MMPS. Schwartz 1940 was the first to implicate the pyschological make-up of the patient as a predisposing factor in the pain dysfunction syndrome. He hypothesized that stress was a significant cause of the clenching and grinding habits, which resulted in spasm of the muscles of mastication. Laskin in 1969, proposed the substitute term Myofascial Pain dysfunction Syndrome [3]. Up to 90% of pain clinic patients, 75% of fibromyalgia patients, and over 50% of TMD patients present with MMPS [4]. More common etiology are 1. Injury 2. Continuous muscle stress. 3. Fibromyalgia, 4. Emotional stress and tension 5. Joint Dysfunctions such as temporomandibular disorders [5,6].

Discussion

Treatment Includes Education, Self-care, Physical therapy, Intraoral appliance therapy, Short term Pharmacotherapy, Behavioural therapy and Relaxation techniques. There is evidence to suggest the combining treatment produces a better outcome [7]. A multi-professional approach (dentists, physicians, psychologists, physiotherapists, chiropractors, and massage therapists) should be used to regain range of motion, deactivate trigger points, and maintain pain relief.

Pharmacotherapy

a. Daily dosage of Nonsteroidal anti-inflammatory drugs - e.g., Aspirin, Ibuprofen, and Diclofenac Sodium [8]

b. Tricyclic antidepressants - e.g., Amitriptyline and Clomipramine [9]

c. Muscle relaxants - e.g., Cyclobenzaprine, Baclofen, And Benzodiazepines [10]

d. Anticonvulsants - e.g., Gabapentin & Pregabalin

e. Selective neuronal potassium channel openers - e.g., Flupirtine

f. Presynaptic neurotoxins - Irvinebotulinum toxin (Botox) potential to provide long-lasting relief to patients. Botulinum toxin can relieve taut bands and trigger points in affected muscles by blocking ACh.

g. Steroids - e.g., Prednisolone

h. Cannabis.

i. Opioids.

Trigger Point Therapy

Spray and stretch therapy is performed by cooling the skin with a refrigerant spray e.g., Fluoromethane and stretching the involved muscles. Travel and simon introducing this method [11]. Cooling allows for stretching without pain that causes a reactive contraction or strain.

Non-pharmacotherapy interventions

Self-Management

Muscle stretching for 2 to 3 times a day up to 10 repetitions. Opening and closing is done within the limits of pain threshold with careful watching of it in straight line at a steady state. Mouth opening and muscle stretching can be done with tongue in contact with palate constantly [12].

Thermal Agents

Application of moist heat for 15 to 20 mins twice daily to relax the masticatory hyperactive muscles. Ice pack application for 10 mins is combined prior with heat application to allow stretching of muscles. Working with soft diet along with home therapy including the physiotherapy is best initial treatment recommended [13].

Occlusal Appliances

Reorganization of Intramuscular usage habits and Reversible reduction of Muscle Activity.

i. Splints i.e., soft splints and hard splints

ii. Orthotics

iii. Orthopedic appliance

iv. Bite guards / night guards / bruxing guards [14],

7.4. Mechanism of action

i. Reduced masticatory muscle activity

ii. Occlusal disengagement

iii. Altered vertical dimension

iv. Realigned maxillomandibular relationship

v. Mandibular Condyle repositioning

vi. Cognitive awareness of mandibular posturing and habits, muscle [15]

7.5. Splint recommendations

i. Soft splints are used but their use could result in inadvertent clenching.

ii. Splints with provisions to anteriorly displace the mandible could result in permanent occlusion changes. Hence a hard, flat plane full coverage split is recommended.

iii. Daytime short wear a lower splint that does not hinder with speech is recommended.

iv. Night time wear requires upper splint [16]

Acupuncture

Involves stimulation of the body at certain points. During a treatment thin steel needles are inserted into the skin and then manipulated gently by hand or with light electrical stimulation [17]. Dry needling was also found to work faster and better than classic acupuncture in the immediate reduction of pain (5 minutes) and was significantly better at alleviating pain intensity and functional disability [18]. Treatment is short for 6 weeks. It stimulates the nervous system by releasing the natural pain killers such as endorphins and serotonin.

Physiotherapy

Active Therapy

Includes active stretching, isotonic and isometric exercises are inducted with home therapy. Combining active with intermittent passive therapy overseen by a qualified practitioner to treat myofascial pain syndrome [19]

Passive Therapy

Passive modalities such as ultrasound, laser and Trans-Cutaneous Electrical Nerve Stimulation are often used initially to reduce the pain. Ultrasound therapy: molecular vibrations and heatwaves induce physical and chemical changes to help release myofascial trigger points [20]. It is useful in chronic myofascial pain syndrome, ligaments, muscles with reflex tension, scar tissue, and relatively thin muscular tissue but is contraindicated in areas of abnormal sensitivity, bleeding sites, and fresh thrombosis. It uses. :1.Alered cell membrane permeability. 2.ultracellular fluid absorption 3. Decreased collagen viscosity 4. Vasodilation 5. Relax muscles and analgesia.It should be done for 3 times a week for 4 weeks [21]. Helium–neon-based lasers: heliumneon lasers are visible red laser beams with a wavelength of 632.8 nm that do not heat human body tissues [22]. A meta-analysis of 3 myofascial pain studies concluded that although better randomized control trials

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are needed to establish the effects of the helium–neon-based lasers on musculoskeletal and skin conditions, they seem to indicate better general therapeutic effects in terms of pain management than placebo [23]. Trans-Cutaneous Electrical Nerve Stimulation (TENS) uses a low-voltage, biphasic current of varied frequency and is designed primarily for sensory counter-stimulation in control of pain. It stimulate local circulation, achieves excitability and conductivity without painful heating. Pulse at 80 cycles / sec for 10 minutes followed by excessive for 5 minutes [24].

Behavioral Therapy and Relaxation Techniques

Deep methods include autogenic training, meditation, and progressive muscle relaxation. Aimed at producing comforting body sensations, calming the mind and reducing muscle tone. Brief methods for relaxations use self-controlled relaxation, paced breathing and deep breathing [25].

Hypnosis and CBT

Have been hypothesized to block pain from entering consciousness by activating the frontal limbic attention system to inhibit pain impulse transmission from the thalamic to the cortical structures.

Conclusion

Thorough understanding of the muscle pathology before treating the patients. Patient education and psychological states of the patient should be noted and positive motivation should be given to the patients. A multi-professional approach (dentists, physicians, psychologists, physiotherapists, chiropractors, and massage therapists) should be used to regain range of motion, deactivate trigger points, and maintain pain relief.

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