PHYSICAL THERAPY MANAGEMENT IN MYOFASCIAL PAIN SYNDROME OF SHOULDER COMPLEX.

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Objective: To review the existing literature on myofascial pain syndrome of shoulder complex and imply the importance of physiotherapy in management in it.

Method: Search strategies from databases like Google scholar, PubMed, PubMed central, Scopus Index, Cochrane library and cross references of retrieved articles. Full text and abstract articles from the year 2002-2016 were included relating to myofascial pain syndrome and physical therapy management in shoulder complex.


Conclusion: Untreated and undiagnosed myofascial pain syndrome may develop psychological and functional problems, its early diagnosis and treatment may help to reduce overlying psychological complications and financial burden. In spite all these treatment still better treatment protocol is required to treating myofascial pain syndrome. The proper treatment of myofascial pain syndrome may be one of the most rewarding if handled correctly.

Introduction:-
The word “myofascia” is derived from the Greek word "myo", which means "muscle" and the word "fascia" refers to the protective covering surrounding a muscle¹. Myofascial pain syndrome (MPS) is defined as musculoskeletal pain condition characterized by local and referred pain perceived as deep and aching, and by the presence of myofascial trigger point in any part of the body². MPS is characterized by Myofascial Trigger Points (MTrPs). A trigger point can be located in fascia, ligaments, muscles, and tendons; however, MTrPs are also found in skeletal muscles and or their fascia. An MTrPs is a hyperirritable spot, associated with a taut band of a skeletal muscle that painful on compression or stretch, and that can give rise to a typical referred pain pattern as well as autonomic phenomena³. There are many theories available supporting evidence of the existence of MTrPs.⁴,⁵,⁶ Simons has
recently proposed a new “integrated trigger point hypothesis”[7]. The integrated trigger point hypothesis has evolved through several steps of progress since its first introduction as the “energy crisis hypothesis” in 1981. The hypothesis builds on the finding that excessive amounts of acetylcholine from the motor nerve terminal cause miniature motor endplates potentials that produce the endplate noise observed with needle EMG of MTrPs. The excessive acetylcholine maintains a sustained depolarization of the post junctional membrane, which in turn results in an excessive release of calcium from the sarcoplasmic reticulum and sustained sarcomeres’ contractions. Studies also suggested that an impaired re-uptake of calcium into the sarcoplasmic reticulum induced by calcium channel blockers may cause MTrPs[8,9].

**Incidence:**-
Epidemiological data indicate the frequent incidence of the Active MTrPs were most prevalent in the infraspinatus (77%) and the upper trapezius muscles (58%), whereas latent MTrPs were most prevalent in the teres major (49%) and anterior deltoid muscles (38%). The number of muscles with active MTrPs was only moderately correlated with the DASH score[10]. Myofascial pain syndrome is diagnosed in 37% of men and 60% of women aged 30-60 years.[5] Occupational neck and shoulder pain is more common in women than in men. Pressure pain thresholds (PPT) are also lower for women, signifying greater hypersensitivity to mechanical stimulation[11]. Researchers established an immediate drop in the concentrations of several substances with dry needling of an MTrPs. If the integrated trigger point hypothesis is basically correct, MTrPs are primarily a muscle disease with but important sensory, motor and autonomic phenomena.[9,12]

**Risk factors:**-
Patients with chronic myofascial pain often have problems that predispose those developing MPS. These factors need to be identified and treated where appropriate and possible. Ergonomic factors[13,14]. Hypermobility, Forward Neck Posture and Prolonged maintenance of posture may have the same effect as repeated low-level muscle activation. Involvement of work related muscle overload has been extensively studied. Physiological factors like Fatigue, general fitness, conditioning and coordination, Iron and Vitamin D deficiency have contributions in Myofascial pain syndrome of shoulder[15].

**Clinical features:**-
A common symptom of active myofascial trigger points where the patient may complain of a pain ranging from a mild ache to an excruciating pain are either sharp or dull and is often associated with general fatigue and a decreased range of motion and loss of muscle strength. Myofascial pain is often referred to a distant site from the MTrPs, in a characteristic pattern for that muscle and sometimes patients are even aware of a numbness or paresthesia rather than pain. Patients often complain of disturbed sleep as a result of myofascial pain syndrome, which can lead to a vicious cycle of increased pain sensitivity the following day[16,17].

Common signs of active myofascial trigger points where Studies concluded that all 5 major Criteria should be present and at least 1 of the minor criteria[3,4,13]. Major criteria includes Regional pain complaint, Pain pattern follows
a known distribution of muscular referred pain, Palpable taut band (inaccessible muscles), Exquisite focal tenderness at one point or module within a taut band. Some restricted range of motion or muscle weakness (when measurable) and Minor criteria includes Manual pressure on the MFTP module reproduces the chief pain complaint, Snapping palpation of the taut band at the MFTP elicits a local twitch response, Pain is diminished or eliminated by muscular treatment, e.g. therapeutic stretch, ischemic compression or needle injection of the MFTP.

Common Shoulder Pain Patterns:-
Active TP’s in the scalene muscles may refer pain in three directions, anteriorly with two finger-like projections to the anterior chest, down the arm to the fingers, and posteriorly to the upper back over the scalapular attachment of the levator scapulae. Active TP's in the scalene anterior and median may refer pain to the thumb and index finger. Additional entrapment symptoms may be caused by TP shortening of the scalene muscles. Ten muscles can cause anterior shoulder pain: anterior deltoid, infraspinatus, biceps brachii, brachialis, scaleni, pectoralis major and minor, sternalis, latissimus dorsi (rare), and coracobrachialis. Three muscles can cause middle deltoid pain: middle deltoid, teres minor, and supraspinatus. Seven muscles can refer pain to the posterior shoulder and nearby scapular region: teres major, sub scapularis, rhomboids, serratus posterior superior, triceps brachii, latissimus dorsi, and levator scapulae.

Diagnosis:-
The diagnostics of the myofascial pain syndrome should include a detailed analysis of a patient's pain history with a clinical examination. The examination should include precise noting of pain areas (indicated by the patient) combined with a palpation, which allows for establishing the patterns of pain radiating from individual muscles. Information helpful in diagnostics may be pain caused during palpation (recognized by the patient), tender point felt within the taut band of muscle fibers, local twitch response, "jump sign", weakening of muscular strength, restricted range of motion and pain resulting from stretching the muscle. The main diagnostic criteria are finding a taut band of muscle fibers and locating a tender, "nodular" area in muscle.

Physiotherapy Management:-
Treatment of myofascial pain requires the inactivation of MTrPs, the restoration of normal muscle length, and the elimination or correction of the factors that created or perpetuated the trigger points in the first place. Many patients with chronic pain develop kinesophobia or fear-avoidance. Physical therapy plays an important role in overcoming kinesophobia and facilitating active movement. Aggressive mobilizations and strengthening programs should be avoided as they may contribute to the development and maintenance of kinesophobia.

Dry Needling:-
Dry Needling is a skilled intervention that uses a thin filiform needle to penetrate the skin and stimulate underlying myofascial trigger points, muscular, and connective tissues for the management of neuromusculoskeletal pain and movement impairments. Deep DN has been shown to inactivate MTrPs by eliciting local twitch responses (LTR). Superficial dry needling, which involves placing an acupuncture needle in the skin overlying an MTrP and electrical twitch-obtaining intramuscular stimulation. Based on previous infraspinatus studies, Trp-DN produces segmental anti nociceptive effects. On the one hand, active MTrPs-DN improves shoulder pain and the irritability of the satellite MTrPs in the referred pain area. For patients with myofascial pain syndrome of the infraspinatus muscle and shoulder pain, dry needling of trigger points of that muscle showed an immediate reduction of pain and improvement of range of movement.

Myofascial Release:-
Myofascial release is a collection of techniques used for the purpose of relieving soft tissue from an abnormal hold of a tight fascia. MFR treatment restores muscle function, promote relaxation and self-healing. There is no special test for this technique, but we can always measure ROM, mark pain scale, test strength before and after the treatment. They commonly classified as Direct Myofascial Release, Indirect Myofascial Release, and Self-Myofascial Release.

Fascial Manipulation:-
The manual therapy technique presents a biomechanical model to decipher the role of fascia in musculoskeletal disorders considering that the myofascial system is a three-dimensional continuum. In Facial Manipulation, the body is divided into 14 segments: head, neck, thorax, lumbar, pelvis, scapula, humerus, elbow, carpus, digits, hip, knee, ankle, and foot. Each body segment is served by six myofascial units (of units) consisting of mono articular and bi
articular unidirectional muscle fibers, their deep fascia and the articulation that they move in one direction on one plane. The center of coordination is identified within each unit. Each center of coordination is located in the point of convergence of the vectored muscular forces that act on a body segment during a precise movement. The manual technique itself consists in creating localized heat by friction by using the elbow, knuckle, or fingertips on the above-mentioned points.³⁰,³¹

**Facilitated Positional Release:-**

PRT originally termed strain–counter strain is a therapeutic technique that uses tender points (TPs) and a position of comfort (POC) to resolve the associated dysfunction.³²

**Muscle Energy Technique:-**

Muscle energy techniques (MET) are a class of soft tissue osteopathic manipulation methods that incorporate precisely directed and controlled patient initiated, isometric contractions, designed to improve musculoskeletal function and reduce pain.³³ The MET has an effect in reducing pain, increase ROM and functional ability in the patient with adhesive Capsulitis.³³,³⁴ Evidence suggest MET (OR similar isometric stretching techniques) is more effective than passive stretching for increasing muscle extensibility.³⁴,³⁵,³⁶

**Kinesiotaping:-**

Kinesio-taping has four effects, to normalize muscular function, to increase lymphatic and vascular flow, to diminish pain and aid in the correction of possible articular misalignments. The myofascial pain of the deltoid muscle has treated an application of Kinesio- taping for the deltoid, reinforced by a transverse strip over the region where the MTPs are located.³⁷,³⁸,³⁹

**Low-Level Laser Therapy (LLlt):-**

Laser therapy is effective in the treatment of musculoskeletal disorders through its analgesic, myo-relaxant, and tissue healing and bio-stimulation effects. Electronic Digital Algometer, "force one gauge-model FDI" was used to detect and confirm the site and sensitivity of trigger points by determining the (PPT) using a pressure transducer probe.⁴⁰,⁴¹

**Cognitive Behavioural Therapy:-**

Reinforce wellness behaviors such as increased activity or participation in an exercise program. Relaxation therapies include a number of strategies aimed at lowering general arousal and promoting a state of relaxation and include biofeedback, imagery, diaphragmatic breathing, autogenic training, and progressive muscle relaxation training.⁴²,⁴³,⁴⁴

**Conclusion:-**

Myofascial pain syndrome of shoulder is a common and treatable cause of morbidity. If left undiagnosed and untreated, it may develop into chronic pain with overlying psychosocial and functional problems. This may lead to further distress, anxiety and even depression. This major source of musculoskeletal dysfunction requires more focused attention. Its early diagnosis and treatment may help to reduce overlying psychosocial complications and the attending financial burden of chronic pain syndrome. Surgical management should be considered only after reasonable nonsurgical efforts have been tried. In spite of all above efforts, more research is still required for the better management of the patient suffering from this syndrome. The proper treatment of Myofascial Pain Syndrome may be one of the most rewarding if handled correctly.

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