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Mini-Review

Application of Manual Therapy in Adhesive Capsulitis: A Literature Review

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Abstract: Adhesive capsulitis, a major contributor to musculoskeletal pain, predominantly affects the shoulder and is often associated with rotator cuff injuries. Manual therapy has emerged as an effective treatment for this condition, addressing limitations in range of motion, joint mechanical alterations, contractures and adhesions in the capsules or ligaments, and misalignment of bone surfaces. This study aimed to review the literature on the effects of manual therapy on adhesive capsulitis. Databases such as PubMed, Scielo, Lilacs, and PEDro were consulted, using keywords like tendinitis, adhesive capsulitis, and manual therapy, resulting in the identification of 180 articles. After applying exclusion criteria, 20 articles were selected, covering the period from October 2019 to March 2020. While cryotherapy and electrotherapy demonstrated effectiveness in treatment, manual therapy stood out for pain control, increased tissue flexibility, and improved range of motion. Techniques such as the McKenzie method, myofascial release, and low-amplitude, high-velocity joint manipulation were frequently mentioned. In summary, despite the lack of a consensus on the best protocol, physiotherapy, with its manual techniques, plays a pivotal role in the functional recovery of the complex shoulder joint.

Keywords: Tendinitis; Adhesive Capsulitis; Manual Therapy.

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1. Introduction

The shoulder joint complex is a region of the human body that is extensively studied due to its complexity, its integration with various joints, and its susceptibility to injuries. The shoulder joint is composed of the glenohumeral, acromioclavicular, sternoclavicular, scapulothoracic, and subacromial joints, which together form a functional kinetic chain in all its activities [1]. Furthermore, it is also composed of various stabilizing structures such as muscles, ligaments, and joints that prevent it from sustaining any type of injury or damage due to its somewhat unstable nature based on its anatomy. Therefore, any dysfunction that may lead to inappropriate biomechanical or physiologically incorrect actions of the shoulder can characterize a pathological condition since it is an articulation region with great mobility. Consequently, it is more susceptible to injuries. In this sense, certain activities that involve repetitive movements or require excessive force can overload the structures, potentially causing injuries to the shoulder region [2].

Hamill and Knutzen [3] state that the shoulder complex is subject to a wide range of injuries that can be caused by trauma. Typically, trauma can occur from contact with an external object, such as the ground, or with another individual, as well as from repetitive joint actions, leading to areas of inflammation within and around the joints or muscle insertions. Shoulder injuries result in pain and reduce joint mobility, negatively affecting functional capacity, work activities, and people's quality of life [4].

According to Pérez et al. [5], painful shoulder is the second most common complaint related to the musculoskeletal system, second only to neck and lower back pain. Approximately 60% of these alterations are related to rotator cuff injuries, which can result from intrinsic tendon degeneration, trauma, inflammatory arthritis, traction tendinosis, and impingement syndrome. Tendon-related shoulder injuries predominantly affect women between the ages of 50 and 60, due to their susceptibility to degenerative processes [6].

The most common tendon injuries are associated with the rotator cuff, which is composed of four muscles: the supraspinatus, infraspinatus, teres minor, and subscapularis. Tendon injuries can also occur in the long head of the biceps tendon, forming stabilizing muscles for shoulder movement [7]. The supraspinatus muscle plays an important role in stabilizing and elevating the glenohumeral joint throughout its range of motion [8]. Likewise, this muscle is involved in producing contractile force for shoulder abduction and external rotation [9].

According to Filho [10], adhesive capsulitis (AC) or "frozen shoulder" is the most controversial of all shoulder pain syndromes, both in terms of diagnosis and treatment. This is due to the still unclear aspects of its etiopathogenesis, natural history, clinical characteristics resembling sympathetic reflex dystrophy, and, mainly, its association with diseases seemingly unrelated to the shoulder. Adhesive capsulitis is divided into three phases: the acute or hyperalgic phase, the freezing or stiffness phase, and the thawing phase [11]. The acute phase is characterized by the gradual onset of diffuse shoulder pain, lasting for about one to two months. The freezing phase is characterized by progressive loss of movement, which can last several months [12]. The thawing phase is characterized by symptom relief, reduced pain, and consequently, improved range of motion. This phase can last several months or years since the improvement occurs gradually [13].

Currently, manual therapy is used in the treatment of various musculoskeletal injuries, including joint and vertebral dysfunction, temporomandibular joint disorders, headaches, cystic fibrosis, nerve compressions, immobilization, among others [14]. Manual therapy techniques include manipulations, mobilizations, and specific exercises aimed at stimulating proprioception, providing elasticity to adherent fibers, stimulating synovial fluid, and reducing pain by removing joint restrictions. Thus, the manual therapist seeks the cause of the patient's symptoms within the body, and in the case of reversible pain, aims to find a definitive solution [15].

Joint mobilization refers to manual therapy techniques used to modulate pain and treat joint dysfunctions that limit the range of motion, specifically addressing changes in joint mechanics. Joint mechanics can be altered due to pain, muscle guarding, joint effusion, contractures, or adhesions in joint capsules or supporting ligaments, and misalignment and subluxation of bone surfaces. To effectively use joint mobilization as a treatment, the physical therapist needs to have knowledge of and be able to examine the anatomy, biomechanics, and neurophysiological mechanisms of the musculoskeletal system [16].

Manual therapy has been used for centuries to alleviate pain and restore function. The use of joint mobilization as a form of manual therapy is increasing due to the evidence supporting its effect in reducing pain. Joint mobilization aims to produce a wide range of beneficial effects by stimulating peripheral mechanoreceptors, inhibiting nociceptors, and increasing synovial fluid flow, thereby helping to reduce pain [17]. In light of the above, this research is relevant as this condition is quite common in the medical field, and many patients suffer from it. Manual therapy is increasingly being used to unlock this joint, acting to reduce joint blockage and assist in range of motion (ROM). This research aims to gather data from the literature regarding the action of manual therapy in the treatment of adhesive capsulitis of the shoulder.

2. Methodology

As procedures adopted for the research, it is classified as a literature review on the effects of manual therapy in patients with adhesive capsulitis. To do so, the Scielo and Lilacs databases were used. In addition, the search for articles was carried out using the following keywords: tendinite (tendonitis), capsulite adesiva (adhesive capsulitis), and terapia manual (manual therapy), as well as their English equivalents. To compose the sample, the following inclusion criteria were adopted: bibliographies that addressed the anatomy and biomechanics of the shoulder complex, as well as the etiology, clinical presentation, and main diagnostic methods related to the disease. The articles were accessed from October 2019 to March 2020. Those without scientific evidence, not addressing physiotherapeutic interventions related to manual therapy, lacking at least two of the chosen keywords, and not proving the efficacy of manual therapy were excluded.

All articles were screened by title, and duplicates were excluded. Then, critical analyses of the abstracts were performed to apply the exclusion criteria. Finally, the references of the selected articles were searched to find additional articles. When located, these studies also had their reference lists reviewed. It should be noted that a full reading of all the manuscripts included in the sample was independently conducted by two researchers, who extracted the relevant information. After the complete reading of the articles, the methodological quality of these was assessed using the PEDro scale, which consists of 10 questions about the study, with a total score ranging from zero to 10 points. Research with scores below 3 points was excluded due to low methodological quality.

The study adhered to all ethical principles and information confidentiality recommended. It is worth noting that, as it involved the analysis of results already published in other articles, formal approval from a research ethics committee was not required.

3. Results and discussion

Adhesive capsulitis is one of the most complex shoulder injuries. From its nomenclature to its possible etiology, there are diverse opinions regarding the appropriate forms of treatment. Moreover, the various available treatment methods are controversial, leading to uncertainty about the most suitable way to treat this condition in its three phases. However, it is worth noting that there is a consensus that pain relief and the restoration of joint mobility should be the focus of initial treatment [10].

Based on the observation of the clinical picture of patients with pain, adhesion of the humerus to the glenoid cavity, and reduced range of motion, Kisner [18] and Filho [10] report that initial physiotherapeutic interventions for adhesive capsulitis aim to relieve pain and edema and increase shoulder joint mobility. According to these experts, as range of motion increases, the muscle strengthening phase can begin. After this acute phase, joint mobilization and manipulation techniques can be applied. Joint mobilization is of fundamental importance for both normal repair processes and tissue health maintenance. Movement provides guidance for collagen deposition, maintains balance between connective tissue components, stimulates normal vascular regeneration, and reduces excessive cross-linking and adhesion formation.

Passive mobilization plays an essential role in restoring shoulder joint biomechanics, involving accessory (translational) movements combined with physiological (angular) movements within pain-free or near the limit imposed by the injury. The Maitland method is quite effective as it involves controlled oscillatory passive mobilization (COPM). It utilizes translational movements combined with physiological movements approaching the limit imposed by the injury, promoting analgesia through the stimulation of mechanosensitive proprioceptors present in the joint capsules of the shoulder region via the mechanism of reciprocal inhibition of fast pain-conducting fibers (A-delta). Mobilizations should be executed and maintained close to the available joint limit. It involves stretching the tissue plastically and should be applied to the sternoclavicular, acromioclavicular, scapulothoracic, and glenohumeral joints.

Myofascial release is a technique that combines support, manual pressure, and tissue gliding. Its implementation requires recognizing areas and paths of resistance and tension, which occurs in an interactive process because it relies on the patient's body response to determine the duration, depth, and direction of pressure applied to the tissue. The touch applied by hands is the initial overload on the tissue, from which biochemical and mechanical responses are expected. What is initially affected is the elastic collagenous component of the tissue (the elastic range), and then, the therapist can feel a flexible resistance (the elastic limit). This technique refers to the action of unlocking and rebalancing muscles (myo) and their connective tissue envelopes (fascia). Manipulating this tissue by the therapist promotes its release and improves musculoskeletal function [19].

With the primary goal of resolving the lack of range of motion (ROM) and High-Velocity Low-Amplitude (HVLA) manipulation, Chiropractic and Osteopathy have also proven to be quite effective in treating adhesive capsulitis. Recognizing that movements of the limbs are influenced by various structures such as bones, muscles, and tendons (which act based on commands sent from the brain to their roots in the spinal column), they seek a manipulative treatment that eliminates certain extrinsic factors to, in a manipulative manner, integrate the axoplasmic flow of the joints. Thus, HVLA not only acts to adjust dysfunctions in the human body's joints, manually or mechanically, actively or passively but also in restoring normal joint functions, reestablishing neurological integrity, and influencing physiological processes. It can be a key to regaining normal movements in patients with adhesive capsulitis because many of these patients have extrinsic triggers. Therefore, most of the time, they experience limitations for an extended period since conventional treatments do not solve their problems [20].

5. Conclusion

The shoulder complex is one of the most intricate joints in the body, susceptible to joint, muscle, and tendon injuries. The joint capsule is one of the regions most affected, impacting approximately 3 to 5% of the population. Adhesive capsulitis (AC), a condition that affects the capsule, joint, and tendons, results in pain, stiffness, and a decrease in range of motion, often lasting for months or even years. Considering this scenario, it's evident that physiotherapy plays a crucial role in the functional recovery of this injury. Numerous methods and treatment procedures are presented in the literature, which can be recommended individually or in combination depending on the patient's clinical condition. From a conservative standpoint, which should be initiated as early as possible, key approaches include analgesics and anti-inflammatories, joint manipulation and mobilization, and muscle strengthening.

There is currently no consensus on the best protocol to follow for functional recovery in this condition. The absence of evidence regarding the treatments mentioned should be considered a limitation, and further studies are necessary. Therefore, this literature review does not aim to exhaust all the aspects involved but rather to contribute to a deeper understanding of the topic at hand.

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