



Common Treatments for Musculoskeletal Disorders: Part III

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Introduction

MusculoSkeletal Disorders (MSDs) are injuries and disorders that affect the human body's movement or musculoskeletal system including muscles, tendons, ligaments, nerves, discs, blood vessels, etc. [1]. Common MSDs include carpal tunnel syndrome, tendonitis, muscle/tendon strain, ligament sprain, tension neck syndrome, thoracic outlet compression, rotator cuff tendonitis, epicondylitis, radial tunnel syndrome, digital neuritis, trigger finger / thumb, dequervain's syndrome, mechanical back syndrome, degenerative disc disease, ruptured / herniated disc, and many more [2]. MSDs are common and risk of developing them increases with age. The severity of MSDs can vary. In some cases, they cause pain and discomfort that interferes with daily activities. Early diagnosis and treatment may help ease symptoms and improve long-term outlook [3].

Symptoms of MSDs

The symptom include recurrent pain, stiff joints, swelling dull aches, muscles feel pulled or overworked, muscles twitch or burn, and fatigue and/or sleep disturbances. They can affect any major area of musculoskeletal system including neck, shoulders, wrists, back, hips, legs, knees and feet. In some cases, the symptoms

of MSDs interfere with daily activities like walking or typing. Limited range of motion or having trouble in completing routine tasks may be developed [4].

Causes of MSDs

Causes of MSDs are varied. Risk of developing MSDs is affected by age, occupation, activity level, lifestyle, family history, psychosocial risk factors, but generally speaking, this problem occurs when muscle tissue is damaged from wear and tear of daily activities. Trauma to a specific area from an accident, falling, sprain or blow can cause musculoskeletal pain, and problems can also arise as a result of strain from bad posture, repetitive movements, lifting heavy weights, maintaining poor posture at work, over-use of a particular muscle, or even standing or sitting still for too long [5-6].

Diagnosis of MSDs

The treatment plan will vary depending on the cause of the symptoms. Thus, it is important to get an accurate diagnosis. To diagnose condition, the physician will likely perform a physical exam such as exploring pain, redness, swelling, muscle weakness, muscle atrophy,

reflexes (Unusual reflexes may indicate nerve damage), imaging tests, such as X-rays or MRI scans (examine bones and soft tissues), blood tests (to check for rheumatic diseases as well as rheumatoid arthritis (RA))^[7].

Treatment of MSDs

The goal of treatment for these disorders is to reduce pain, reduce inflammation of the affected tissue / joint, improve function of the affected organ / limb, return to daily activities, and more ^[2,8]. Various treatment options have been suggested to treat these disorders, such as physiotherapy ^[9], occupational therapy ^[10-11], bracing and splinting ^[2], drug therapy ^[12-13], surgery ^[14], lifestyle modification ^[15-16], physical and psychological stress reduction ^[17-18], Improving the quality of life ^[19] and more. The following are some of the treatments that are briefly listed.

Physiotherapy

Physiotherapy is clinically effective and cost effective in the management and treatment of MSDs. Physiotherapists are most faced with individuals who suffering from MSDs. Physiotherapy employs advanced clinical assessment and diagnosis methods and has an important role in the treatment of MSDs. Physiotherapy helps restore movement and function when someone is affected by injury, illness or disability and can help with back pain, sudden injury and long-term medical conditions as well as childbirth and sporting injuries. This treatment utilizes a variety of devices like laser, ultrasound, superficial and deep heat, cold, analgesic devices and currents, electromagnetic waves, and also therapeutic techniques such as massages, muscle exercises, different types of manual therapy, or mobilization of joints and tissues as well as exercises in water. Physiotherapy seeks to alleviate the disorder by reducing

pain and inflammation of the damaged tissue and improving its function. The emerging evidence suggests that physiotherapists in advance physiotherapy practice (APP) roles provide equal or better usual care in comparison to physicians in terms of diagnostic accuracy, treatment effectiveness, use of health care resources, economic costs and patient satisfaction ^[9].

Occupational therapy

The Occupational therapy service assesses patients to identify their needs, and aims to help them achieve independence, so they can be safely discharged from hospital. In other words the occupational therapy services provides assessment, treatment, advice, education and support on a range of musculoskeletal problems including osteoarthritis, rheumatoid arthritis, fibromyalgia, chronic fatigue, dealing with chronic conditions associated with spinal and neck conditions, hand problems resulting from ligament injuries, sprains and strains and soft tissue injuries and helping with the management of chronic pain. These activities focus mainly on mobility, transport, personal care, education, and a risk assessment of the patient's home environment ^[10-11].

Bracing and splinting

Braces and splints can be useful for acute injuries, chronic conditions, and the prevention of injury. The purpose of braces and splints is to improve physical function, slow disease progression, and diminishing pain. They can be used to immobilize an unstable joint or fracture, to unload a portion of a joint and improve pain and function, to eliminate range of motion in one direction, or to modify range of motion in one or more directions. Accurate diagnosis of the injury is important in determining whether a brace or splint is indicated. Generally, splints are for short-term use. Excessive, continuous

use of a brace or splint can lead to chronic pain and stiffness of a joint or to muscle weakness. However, long-term use of some braces, such as a knee unloaded brace, can help prevent progression of pain attributable to osteoarthritis of the knee [20].

Drug therapy (medications)

In the absence of a path anatomic diagnosis and other effective therapies, musculoskeletal pain commonly is treated using drugs. Medications such as Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) may be used to treat inflammation or pain. NSAIDs, are some of the most common pain relievers available. They include over-the-counter medications such as aspirin and ibuprofen, but they are also available in prescription strength. NSAIDs not only relieve pain, but they reduce inflammation, lower fevers, and prevent blood from clotting. Other treatment includes muscle strengthening exercises and stretches, physical or occupational therapy, acupuncture, and therapeutic massage [21]. The effectiveness of the drugs used in musculoskeletal pain conditions is disappointing and many of them are ineffective. Others are successful in reducing the level of pain, but the effect is modest or lasts briefly. The effect of drugs on disability and quality of life is nil or minimal. It seems that prescribing drugs satisfies a humanitarian urge by offering some degree of pain relief. This may be a valuable achievement in the context of daily pain, but if complete resolution of pain and disability is the aim of treatment, we must admit that there is no pharmacologic therapy by which these goals can be reached. Recent developments offer new perspectives regarding the pharmacologic treatment of musculoskeletal pain that may provide a better means of satisfactory pain management [22].

Surgery

Musculoskeletal surgery refers to a number of surgical procedures that aim to improve, manage, or treat disorders, diseases, injuries, or congenital conditions of the musculoskeletal system. This organ system, which involves the bones, joints, tendons, ligaments, and muscles, is responsible for providing form and support, ensuring stability, and allowing movement to the human body. Musculoskeletal surgical procedures are performed by surgeons specializing in orthopedics. Patients who have the following issues can be considered ideal candidates for musculoskeletal surgery provided that their physicians have determined that it is the best treatment after assessing the risks and benefits of the procedure:

Injury

Trauma can be caused by a wide variety of factors, but many patients suffer from injury due to sports and accidents. Injury can involve fractures and dislocated bones.

Degenerative diseases

These are diseases that cause the degeneration of the joints, bones, and surrounding tissues and muscles. Examples of these disease include:

- **Arthritis.** This disease is characterized by joint inflammation, and there are two kinds: osteoarthritis and rheumatoid arthritis. The former causes stiffness in the joints, pain, and enlargement of the affected bones while the latter causes stiffness or soreness of the joints, and can lead to bone deformity over time.
- **Osteoporosis.** This disease often affects older women, and involves the loss of bone density, leading to serious fractures in vital parts of the body, such as the pelvic bone, legs, and arms.

Herniated intervertebral disk

In this condition, the patient's vertebrae pinch nerve roots, and can cause severe pain and limited mobility.

Cancers of the musculoskeletal system

These are relatively aggressive forms of tumor growth. When left untreated, these cancers can result in the loss of an affected limb, or fatal metastasis over time.

Infections: This problem includes osteomyelitis, which involves fungi or bacteria invading the patient's bone. Younger patients will often contract this infection in the longer bones of the body, such as those in the legs and the arms. In adults, however, osteomyelitis occurs in the feet and spine. If left untreated, infections can severely damage the bone and permanently affect the way the patient moves around. Osteomyelitis is often accompanied by an inflammation in the area, stiffness, and heaviness to the body or affected limb, as well as fever.

Different techniques can be used in musculoskeletal surgery. In the past, musculoskeletal surgery has been invasive, but in the last couple of years, less invasive procedures have been developed to minimize the recovery time, risks, and complications of surgery. Common musculoskeletal surgical procedures include the following:

- **Hip replacement:** This treatment involves the removal of one of the largest joints in the body. The damaged hip is replaced with a prosthesis, which aims to relieve pain, improve the joint's function and improve mobility over time. The majority of the patients are over sixty years old, and common prosthesis materials include metal alloys and ceramic.

- **Knee replacement:** This is a routine operation often recommended for patients with arthritis. This procedure can be a total or partial replacement and may involve one or more sides of the knee joints.

- **Reconstruction of the anterior cruciate ligament (ACL):** It involves a ligament in the knee. ACL injuries are common among athletes participating in sports such as basketball, rugby, football, tennis, and skiing. The procedure is performed by attaching new tissues to the torn ligament.

- **Carpal tunnel surgery:** This can be performed through endoscopy or an open technique. Many patients opt for endoscopic surgery because it is minimally invasive and only requires small incisions in the palm and wrist.

- **Rotator cuff tendon repair :** This surgery is for torn muscles and tendons surrounding the shoulder joints that can be performed with an open repair, through arthroscopy, or a partially open repair that also employs an arthroscopy.

- **Lumbar spinal fusion :** This is often recommended for patients suffering from degenerative disc disease, and involves the addition of a bone graft to a targeted section of the spine. Bone grafts can also be encouraged to grow in the affected section of the lumbar spine through stimulated biological responses.

- **Ankle fracture repair:** This surgery can involve holding together the broken bones using biocompatible screws and metal plates ^[23] .

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