

Myofascial Syndrome

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- Summary

Myofascial: from the Greek myelos, meaning marrow (muscle) and from the Latin fascia meaning bandage or band

Myofascial syndrome (MFS) is a painful musculoskeletal condition characterized by painful foci of muscle called trigger points (TrPs). MFS became better known based on the work of a well-known Washington, D.C. physician, the late Dr. Janet Travell. Dr. Travell was the White House physician for a number of presidents.

MFS has often been confused with fibromyalgia because they both involve muscle pain. The trigger points of MFS are different from the tender points of fibromyalgia in that they may be just about anywhere, whereas the tender points of fibromyalgia are in a specified pattern. When a physician presses on a tender point in patients with fibromyalgia, the patient describes exactly that-tenderness. When a physician pushes a trigger point in MFS, the trigger point elicits an involuntary "twitch" response. Additionally, the patient may report pain that radiates to an area away from the trigger point itself. This is what is considered "referred pain." The painful trigger point area is in the muscle or the junction of the muscle and fascia. Hence, myofascial pain is usually associated with a taut band, indicating a "ropey" thickening of the muscle tissue.

The fascia is a tough connective tissue that spreads throughout the body in a three-dimensional web from head to foot without interruption. The fascia surrounds every muscle, bone, nerve, blood vessel, and organ of the body, all the way down to the cellular level. Therefore, malfunction of the fascial system due to trauma, posture, or inflammation can create a "binding down" of the fascia, resulting in abnormal pressure on nerves, muscles, bones, or organs.

Much of the pain that accompanies MFS is due to inadequate blood flow to the trigger point area (ischemia) that inhibits the ability of the muscle to eliminate metabolic wastes, such as lactic acid and potassium. These accumulated metabolic byproducts combined with inadequate oxygen flow to the affected area then build up, stimulating nearby nerve endings that lead to trigger point pain.

DISTINGUISHING MYOFASCIAL SYNDROME FROM FIBROMYALGIA

- Causative Factors
- Treatment
- Depression and Anxiety
- Pain and Associated Depression
- Dietary Changes
- Amino Acid Supplementation
- Exercise

What distinguishes MFS from fibromyalgia (FM) is that MFS is not usually associated with poor sleep or chronic fatigue, although some patients may have a little bit of both. The trigger points of MFS do not go away by getting the patient to sleep better. Since a patient can have both FM and MFS, treating the FM may improve things. However, persistent painful areas may be the result of MFS. For example, a patient may experience headaches and have classic FM. Following the FM protocol makes the patient feel much better, but the headache persists. Upon reexamination, the patient's physician finds the same mid-trapezoidal trigger points described above, greater on the right than the left. It turns out that the patient carries a heavy laptop every day on the right shoulder. When the trigger point is pressed upon very firmly, the patient develops neck pain that evolves into a migraine. Treating the trigger point and having the patient stop carrying the laptop for a while will result in resolution of the headaches. What has been described is, of course, the ideal diagnostic situation. Some patients may not develop the migraine right there in the office. However, any person who has unexplained headaches should have an evaluation for the presence of trigger points. The same is true for any persistent muscular pain that appears to be nondermatomal in origin.

Causative Factors

- Repetitive motions; excessive exercise; muscle strain due to overactivity
- Lack of activity (leg or arm in a sling)
- Nutritional deficiencies
- Nervous tension or stress
- Generalized fatigue
- Sudden trauma to muscles, ligaments, or tendons
- Hormonal changes (PMS or menopause)

Treatment

Mapping out the myofascial pain regions and their associated trigger points was attributed to the work of Dr. Travell. She developed a technique which is used to either inject a local anesthetic with a mild anti-inflammatory steroid solution into the trigger point or to break up the trigger point with a needle. The exact pathology of the trigger point is not entirely understood. What is clear is that treating the trigger point is responsible for resolving many types of pain patterns.

Janet Travell's work coincides with acupuncture points. The trigger points and associated pain radiation areas have been co-related by an acupuncture researcher. As it turns out, 87% of Dr. Travell's trigger points and their associated pain areas lie on acupuncture meridians and correlate with known acupuncture points. Additionally, acupuncturists describe a certain grabbing of the needle which is called taking Chi. This correlates with the twitch response described by Dr. Travell. When a trigger point is properly needled, there is a visible "grab" observed by the practitioner and a feeling of a grabbing or slight contraction around the needle experienced by the patient. Although new to Western medicine, Dr. Travell's work had already been discovered and utilized thousands of years before by the Chinese (Travell et al. 1983)!

The acupuncture points He Gu (the point near the wrist where the thumb and forefinger join) and Yin Men (on the back of the thigh) were found to increase blood flow and reduce MFS-related pain (Wang et al. 1998). Most studies, however, seem to indicate that although acupuncture is an effective short-term treatment of chronic pain due to MFS, there is only limited evidence that acupuncture will be effective in the long-term, and further human studies need to be conducted (Fargas-Babjak 2001; Irnich et al. 2001). One study on the use of amitriptyline in people with temporomandibular joint (TMJ) pain and MFS seemed to show that the beneficial effects of these pain treatments reduced over time, but the muscular pain was still manageable more than 1 year after treatment (Plesh et al. 2000). Amitriptyline is a tricyclic antidepressant drug with many side effects that preclude long-term use in most people.

For refractive cases of MFS, a homeopathic solution of traumeel and/or a mild narcotic called buprinorphine injected into the trigger point(s) may be employed. Dr. Travell's technique of injecting corticosteroids and/or local anesthetics into the trigger points appears to be effective in reducing muscle pain. Dr. Iwama and his colleagues at the Central Aizu General Hospital, Aizu, Japan conducted studies on 40 women with chronic lumbar, shoulder, or neck myofascial pain. Using Dr. Travell's technique each woman was given an injection of diluted anesthetic or a saline placebo and their pain levels were measured. In another portion of the study, 21 outpatient volunteers were given different dilutions of different anesthetics in each shoulder. Dr. Iwama concluded that the most suitable type of local anesthetic is lidocaine or mepivacaine and the most effective water-diluted concentration is 0.2-0.25% (Iwama et al. 2001).

Trigger points may require multiple treatments that necessitate excessive amounts of steroids over time. Some physicians feel that local anesthetics may irritate the muscle tissue, and multiple injections into the same trigger point may aggravate the problem.

Buprinorphine, when diluted and injected into the trigger points, may have a local pain-reducing action or in some way help to directly break up the trigger point. Additionally, buprinorphine is a mild narcotic analgesic that makes repetitive injections more tolerable for the patient. The dosage of traumeel is not critical since it is homeopathic. One to 2 ampules a session may be adequate, depending upon the number of trigger points and the volume of the solution. The proportion works out to 1 ampule per 10 cc of saline. Since buprinorphine has a systemic action and may produce drowsiness, no more than 2 ampules are usually used a session, again depending upon the volume used. Some patients, especially those who are obese, may tolerate more than 2 ampules a session. The dilution is 1/2-2 ampules (0.15-0.6 mg) per 20 cc of saline depending upon patient response and the number of trigger points treated per session. It is advised to begin with the lower concentrations.

The injections are usually only 2-4 cc per trigger point. Someone must drive the patient home after treatment because of the potential for sedation. For really difficult-to-treat trigger points, the Edegawa technique involves taking a 60-cc syringe filled with saline (salt water) and injecting it rapidly through an 18-gauge (large) needle. Anywhere from 20 cc up to the full 60 cc may be used for a particularly recalcitrant trigger point. It is believed that the rapid influx of saline pulls the muscle fibers apart where they cross the trigger point, resulting in a breakup of the trigger point itself.

If saline injections fail, traumeel and buprinorphine may be added to the saline. This combination is recommended at the outset due to the safety of the two preparations: the possible direct actions of both agents on the trigger point, and the systemic pain-killing properties of buprinorphine. After all, multiple injections of large volumes of fluids into the muscle tissue are painful. The dilution is 6 ampules of traumeel and 1-2 ampules of buprinorphine per 60 cc of saline. Each trigger point may require anywhere from 10-60 cc of fluid as previously described. The amount must be found empirically. No matter how many trigger points are treated, it is suggested that no more than 3 ampules a session of buprinorphine be used because of the potential for sedation. However, some patients, especially those who are obese, may require and tolerate more. There is no need to worry about addiction (see the Pain protocol for more information).

A Link to Depression and Anxiety

Many painful conditions, including headaches, migraines, TMJ pain, and muscle pain improve when the trigger points associated with myofascial syndrome are identified and treated. However, chronic pain may affect people emotionally, and many people with MFS experience depression or anxiety disorders. It may be beneficial to consult a mental health professional in addition to a regular physician (Glaros 2000) (see the Depression and Anxiety and Stress protocols for additional information).

Antidepressants are often prescribed for the treatment of MFS. At low doses, medications, such as tricyclic antidepressants relax muscles, improve sleep, and help in regulating neurotransmitter activity that contributes to the associated pain. At higher doses, they will help relieve depression, but have side effects that often preclude long-term use.

Reducing Pain and Associated Depression

The antidepressant supplement S-adenosylmethionine (SAMe) has been shown to be specifically effective as a therapy to reduce the chronic pain and depression associated with fibromyalgia (Jacobsen et al. 1991). SAMe is synthesized in the body from the amino acid methionine. An enzyme called methionine S-adenosyltransferase (MAT) catalyzes a reaction between methionine and ATP to form SAMe. SAMe has been tested for depression caused by a variety of diseases, including Parkinson's disease (PD), fibromyalgia, cancer, cardiovascular disease, and rheumatoid arthritis. Researchers have used SAMe successfully in conjunction with drug and alcohol withdrawal.

In a study reported in the Scandinavian Journal of Rheumatology, 44 fibromyalgia patients took 800 mg of SAMe for 6 weeks. Results showed that SAMe reduced pain at the tender points, as well as fatigue, morning stiffness, and resting pain (Jacobsen et al. 1991).

Buprenorphine is a mild narcotic with agonist and antagonist properties that has a very low addiction liability, if any, indicating it can be used for a long period of time without developing serious withdrawal symptoms. Buprenorphine is effective in conditions with multiple symptoms such as MFS because it acts rapidly on depression, reduces pain, and induces sleep (Cathelin et al. 1980).

Buprenorphine is available as an injectable, 0.3-mg ampule, a small dose even for injection. The dosage is variable. Because buprenorphine is poorly absorbed orally, larger dosages must be used. When taken orally, the buprenorphine liquid is withdrawn or shaken from the ampule and held under the tongue as long as possible. Compounding pharmacies can make up buprenorphine for sublingual use as a troche. Both forms, the ampules and troches, are expensive. For pain that prevents sleep, start with 2-6 ampules sublingually or 0.5-2 mg as a sublingual troche. For treating pain throughout the day that is associated with depression, begin with 2-6 ampules (or 0.5-2 mg as a sublingual troche) every 4-6 hours. As is common with most medications, begin with a low dose and increase slowly until the smallest dose that proves effective is reached. Do not be concerned about addiction.

Dietary Changes to Improve Symptoms

Patients with MFS are encouraged to employ proper basic nutrition and supplementation. Women with MFS have been found to have higher cholesterol levels than women without MFS, but no conclusive link has been made between blood lipid levels and MFS (Ozgocmen et al. 2000). The following dietary recommendations will improve overall health:

- Limit intake of stimulants (caffeine) and depressants (alcohol) because of their potential to disrupt neurological and metabolic function.
- Limit intake of refined sugars to avoid fluctuation of blood sugar levels, mood swings, lowered energy, and lowered immunity.
- Consume whole foods such as fruits and vegetables which contain phytochemicals and fiber. Fiber is helpful for maintaining digestive regularity. Eat more slowly, chewing food well.
- Increase intake of cold water fish which supply essential fatty acid building blocks (gamma linolenic acid, GLA; eicosapentaenoic acid, EPA) that are needed for cell membrane maintenance and function.
- Increase intake of probiotic cultures from food or supplements. (Probiotics are "healthy" bacteria that normally reside in the gastrointestinal tract. "Healthy" bacteria aid the proper digestion of food and prevent the absorption of ingested toxins.)
- Drink plenty of water (preferably purified) to ensure adequate fluid levels (Anon. 2001).

Amino Acid Supplementation

Phenylalanine is one of the 20 essential amino acids that must be obtained from the diet. It is a necessary precursor for neurotransmitter biosynthesis and may be helpful in relieving chronic pain. The amino acid tyrosine is synthesized in the body from phenylalanine. It is a precursor to the biosynthesis of the neurotransmitters epinephrine, norepinephrine, and dopamine. Tyrosine has been used as an antidepressant because it positively affects the neurotransmitters that are required to prevent depression. Supplementing with these two amino acids may be beneficial to people with MFS. Vitamins B6 and C are cofactors in the bioconversion of these amino acids to their neurotransmitter receptors.

Exercise

With the help of a physical therapist or other health care professional, exercises can be designed for the person with MFS, which will avoid causing undue stress and pain to sensitive trigger points while improving physical fitness. In addition to promoting overall fitness, physical activity assists in maintaining flexibility and building muscle strength, helping to protect joints. Walking, bicycling, swimming, and some types of weight-bearing exercises are good examples of physical activity that may be appropriate. It is important to note that lack of exercise can lead to brittle bones and causes muscles to become smaller and weaker. In particular, people with MFS should avoid repetitive weight-bearing exercises involving the affected area. Gentle stretching of muscle groups should be done daily to their full range of motion within the limits of pain.

SUMMARY OF TREATMENT MODALITIES

- Trigger point therapy: myofascial release therapy, myotherapy, massotherapy spray, and stretch technique (stretching of the muscles with a vapocoolant spray, where a coolant is sprayed on the trigger point to lessen the pain and then the muscle is stretched). This is often done by a physical therapist.
- Trigger point injections: local anesthetics, such as lidocaine, injected directly into the trigger points. Trigger point injection has been shown to be one of the most effective treatment modalities to inactivate trigger points and provide prompt relief of symptoms (Alvarez et al. 2002).
- Dry needling: the use of a needle without injecting anything. TrP injections and dry needling mechanically disrupt the trigger point. The use of lidocaine is no more effective, but it reduces the soreness after injection.
- For MFS there is no role for injected steroids.
- Acupuncture is recommended as a treatment option for patients with associated musculoskeletal conditions (Kam et al. 2002).
- The application of ice packs will provide temporary relief by numbing the affected area.
- Chiropractic or osteopathic manipulation treatment
- Physical therapy (hands-on)
- Exercise
- Improved nutrition
- Elimination of stress; biofeedback; counseling for depression that may result from chronic pain

SUMMARY

Patients with unexplained persistent headaches or muscle pain should be examined for the presence of trigger points. Consult with a healthcare professional familiar with the various techniques used to relieve the pain associated with trigger points.

1. Make sure that both you and your physician find the source of the trigger points and seek ways to prevent recurrence. Look for repetitive injury as the cause before deciding that stress is the etiology. If stress is the etiology, it is most important to find ways of relieving it or the MFS pain will recur.
2. Consider phenylalanine and/or tyrosine, up to 1000 mg a day (see Phenylalanine and Tyrosine Dosing and Precautions protocol).
3. SAME may be indicated for depression and trigger point pain associated with MFS. The suggested dose is 400-800 mg twice daily.
4. Supplementing with essential fatty acids will help maintain cell membrane integrity and relieve associated inflammation. A product called Super GLA/DHA is formulated with anti-inflammatory fatty acid GLA (gamma linolenic acid) along with DHA (docosahexaenoic acid) and EPA (eicosapentaenoic acid) extracted from fish oil. Six softgel capsules of Super GLA/DHA are recommended daily.
5. Follow good basic nutrition.
6. Supplement with a probiotic formula to help improve nutrient absorption and enhance immune system functioning. One 300-mg capsule of Life Flora daily is recommended.

7. Buprenorphine is a mild narcotic that can safely relieve multiple symptoms of MFS. Contact a compounding pharmacy to make a sublingual preparation. Buprenorphine must be prescribed by a physician.
8. Consider regular exercise under the guidance of a healthcare professional to maintain cardiovascular and musculoskeletal fitness.

PRODUCT AVAILABILITY

DL-Phenylalanine, L-tyrosine, SAME, Super GLA/DHA, and Life Flora are available by calling (800) 544-4440 or by ordering online.

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