Myofascial Pain Syndrome

Definition

- ✓ Myofascial pain syndrome (MPS) is a painful disorder characterized by:
- presence of myofascial trigger points (MTrPs),
- distinct sensitive spots in a palpable taut band of skeletal muscle fibers
- ✓ MPS is characterized by **both** a **motor abnormality** (a taut or hard band within the muscle) and a **sensory abnormality** (tenderness and referred pain)

- ✓ the disorder is accompanied by **referred autonomic phenomena** as well as by **anxiety** and **depression**
- ✓ The pathophysiologic mechanism of MPS is not clearly understood
- ✓ Symptoms of MPS are associated **with physical activities** and **muscle overload**, **sudden overload** or **gradually prolonged repetitive activity.**
- ✓ The MTrP is generally considered the hallmark of MPS
- ✓ One feature of the MTrP is the so-called **twitch response**
- ✓ This local response is considered a characteristic finding of the MTrP

- **Mechanical stimulation** ("snapping" palpation, pressure, or needle insertion) can elicit a local twitch response that frequently is accompanied by referred pain.

- **Probable hypothesis**:
- **Increased a-adrenergic activity** (dose not fully explain the EMG findings)
- **Structural changes**(such as alteration in apearance in muscle spindle)
- **Inadequate blood flow** (chronic eccentric contraction)
- **Excessive release of Ach in abnormal end plate (sudden concentric contraction or repetitive overuse)**
- **CNS process(** change neurons in cingulate cortex as subsequence of chronic persistant peripheral pain)

Symptoms

١. dull or achy pain,

٢. sometimes poorly localized,

٣. particularly occurring during repetitive activities or during activities requiring sustained postures

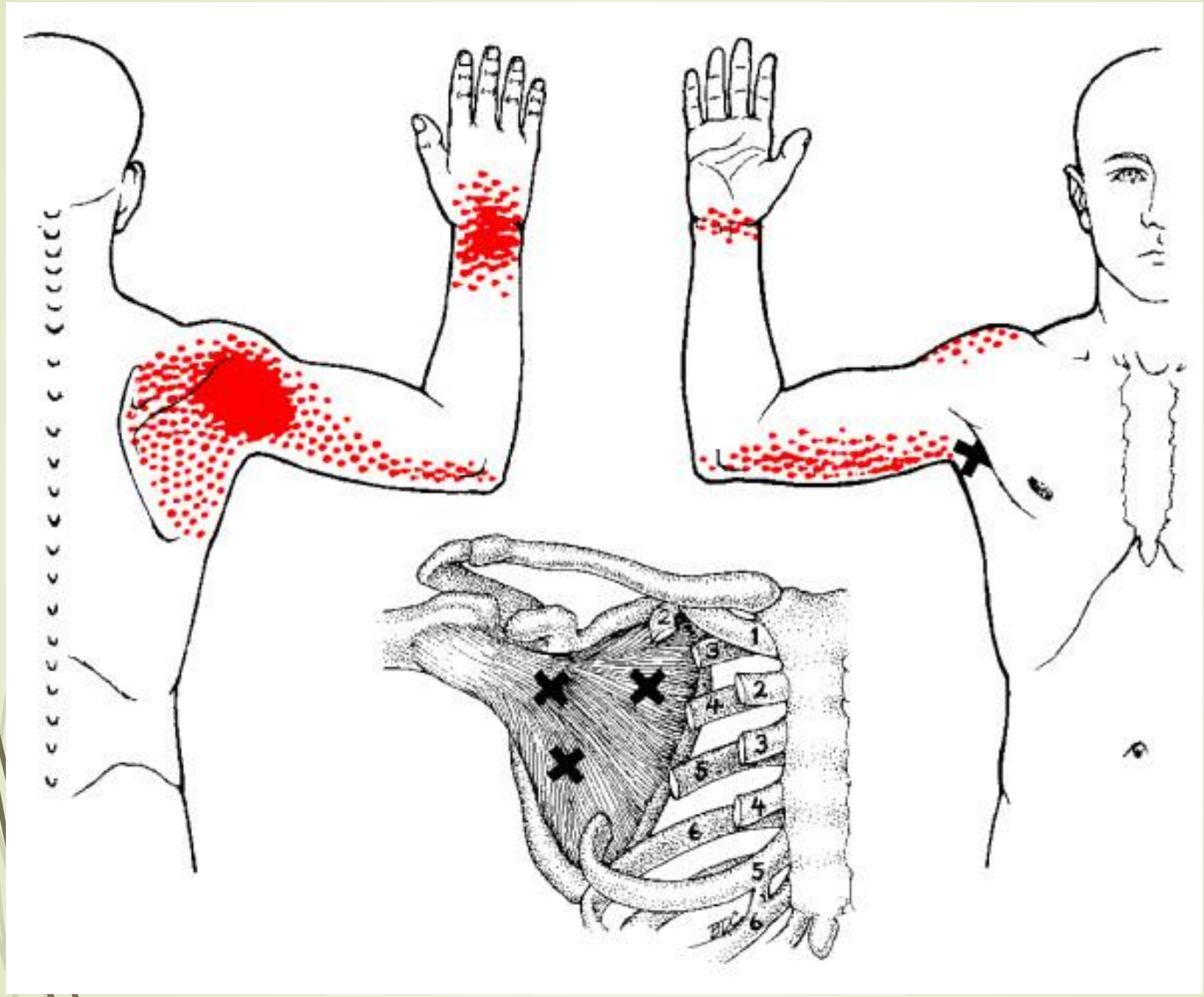
٤. exacerbated with digital pressure over tender areas of muscle

- relieved with rest or cessation of repetitive activities

Physical Examination

- ✓ most important part of the physical examination → localizing MTrPs
- ✓ standard criterion reference on locating and treating MTrPs → *Travell & Simons' Myofascial Pain and Dysfunction: The Trigger Point Manual*
- ✓ To find MTrPs → palpate a localized tender spot in a nodular portion of a taut, ropelike band of muscle fibers

- ✓ Manual pressure over a trigger point should elicit pain at that area and may also elicit pain at a distant site (referred pain) from the point under the fingertip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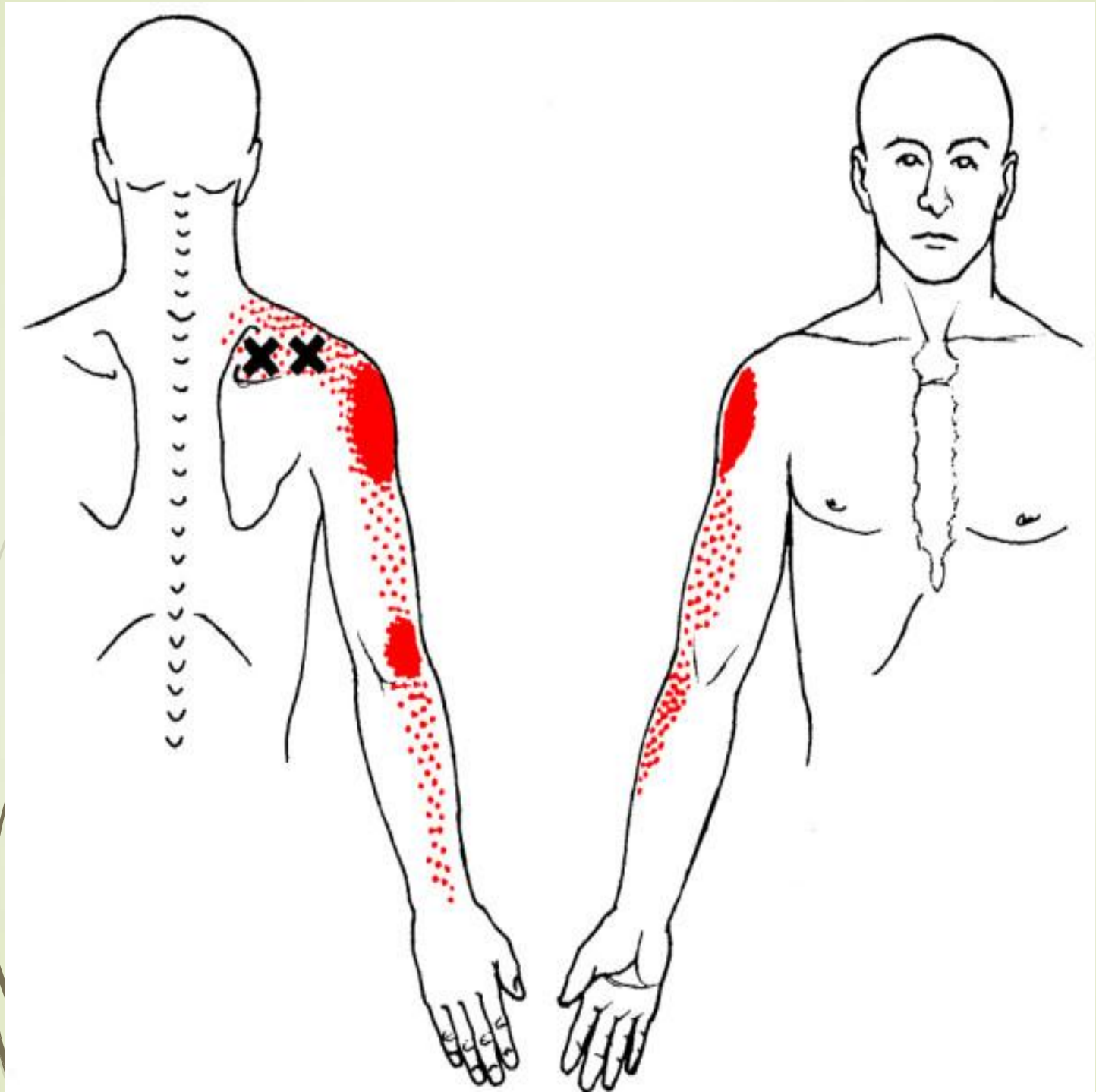

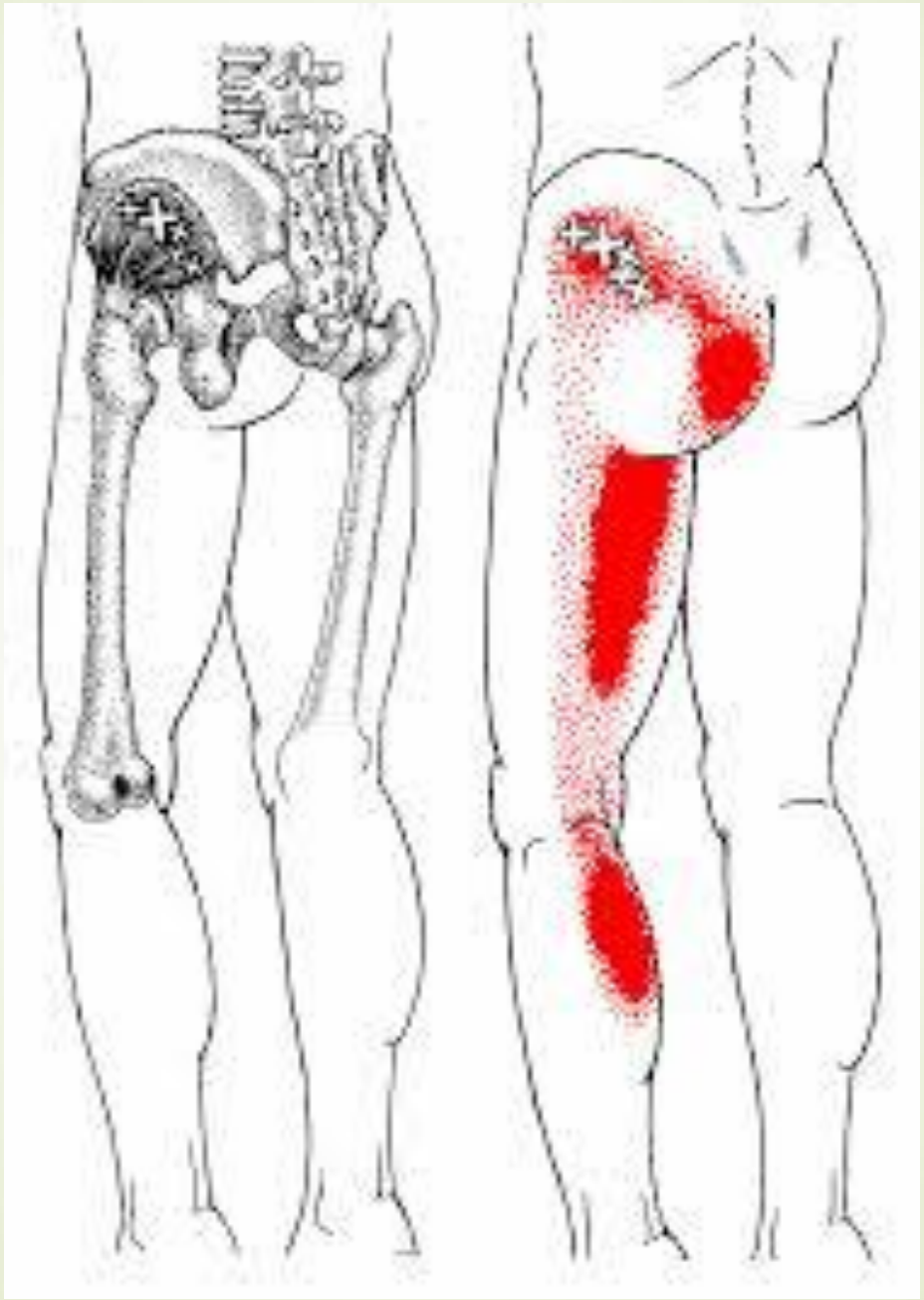

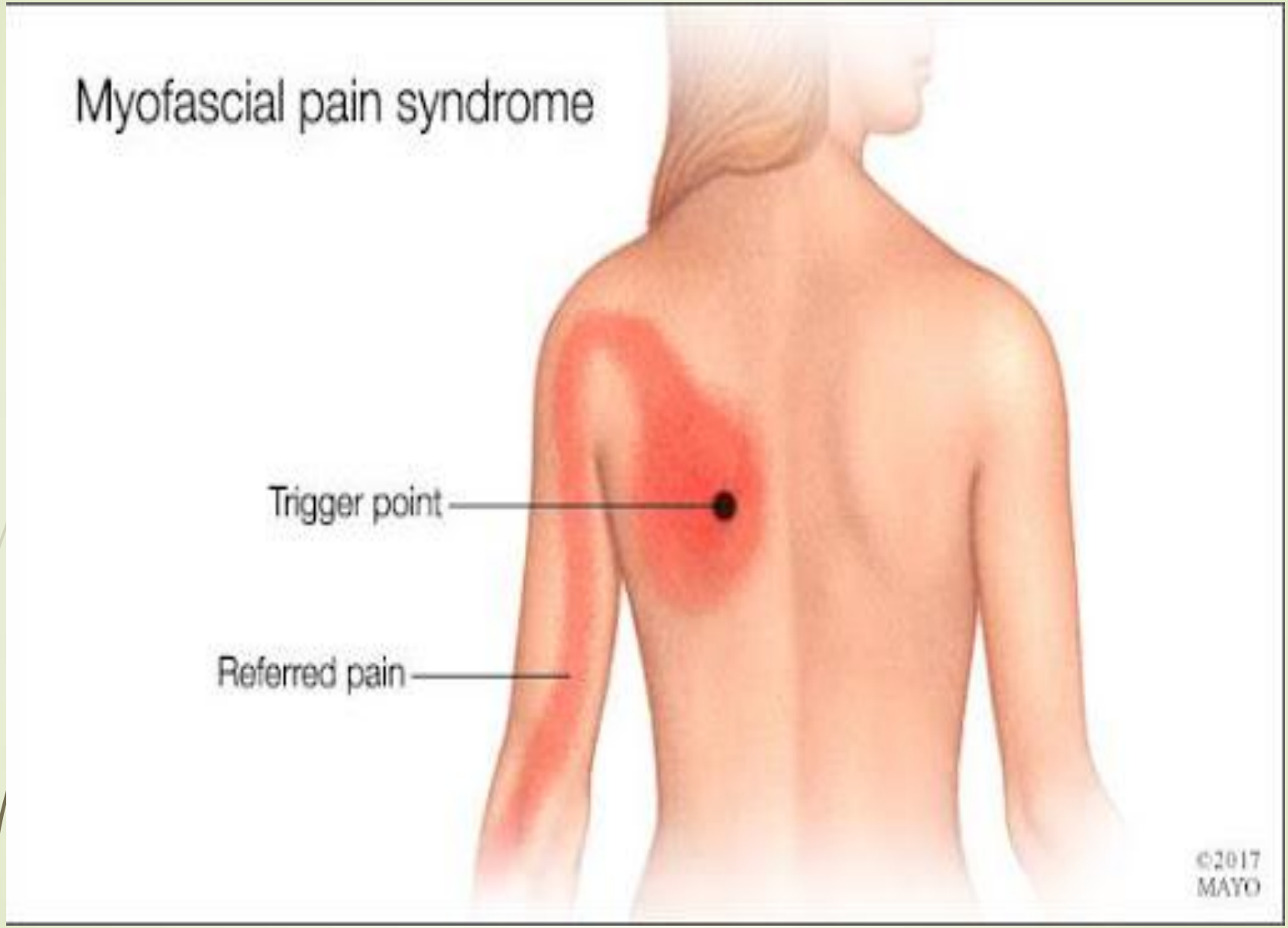
Myofascial pain syndrome
Trigger point
Referred pain
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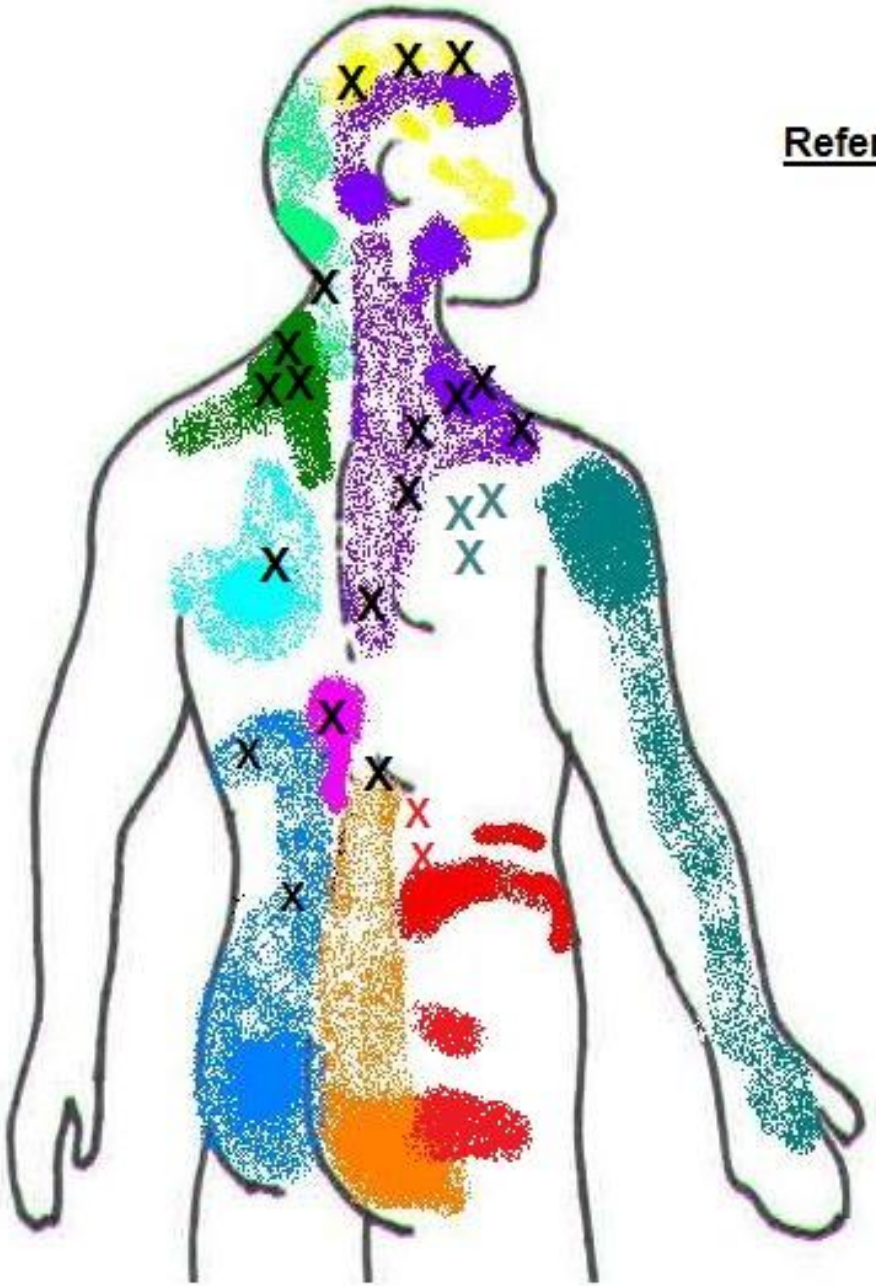


X =Trigger Point

Referred Pain Pattern & Muscle of Origin

- Iliocostalis Thoracis
- Multifidus
- Iliocostalis Lumborum
- Infraspinatus
- Quadratus Lumborum
- Longissimus Thoracis
- Levator scapulae
- Semispinalis Capitis (back of head)
- Trapezius
- Temporalis

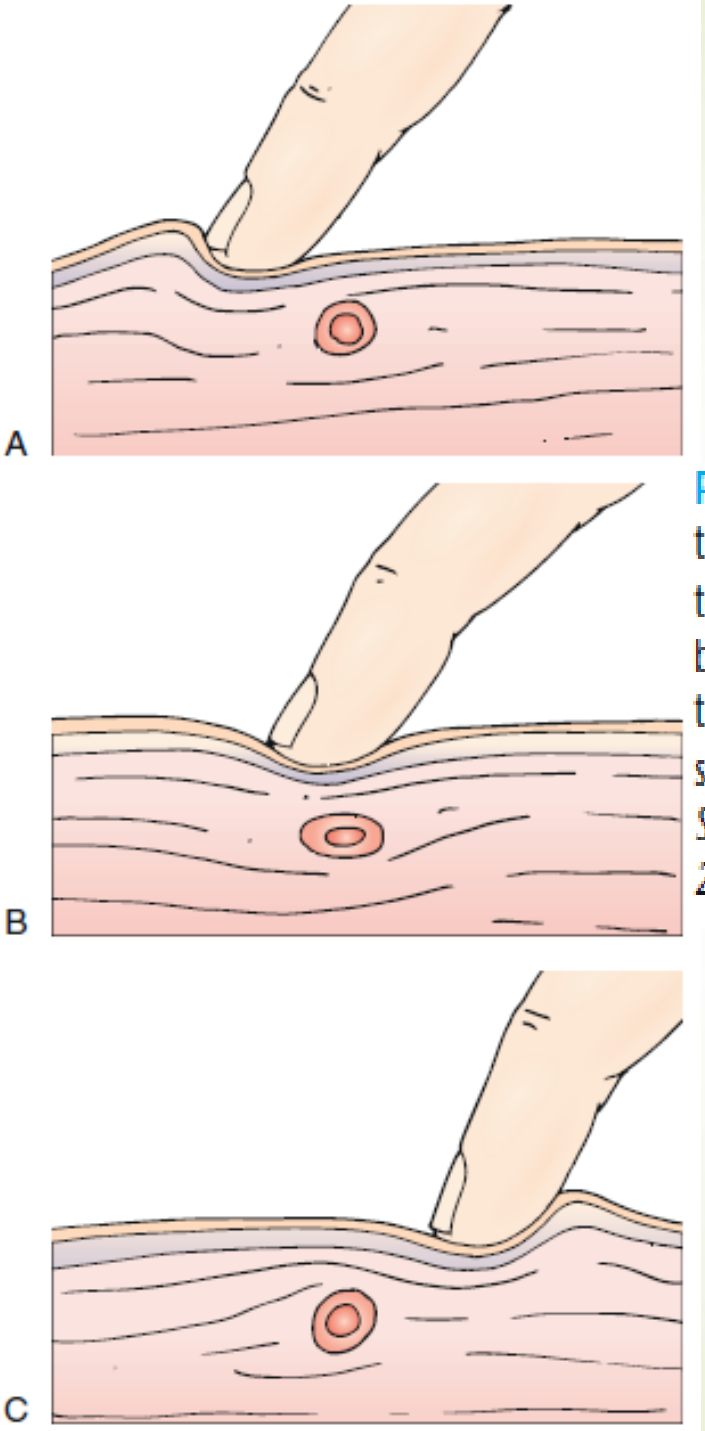


FIGURE 104.2 Flat palpation technique useful in examining muscles that are accessible only from one side. **A**, Index finger pushes skin to one side. **B**, Fingertip sweeps across the muscle to feel the taut band rolling beneath. **C**, Skin is pushed to the other side, completing the movement. When it is done vigorously, this technique is called snapping palpation. *(From Simons DG, Travell JG, Simons LS. Travell & Simons' Myofascial Pain and Dysfunction: The Trigger Point Manual, 2nd ed. Baltimore, Williams & Wilkins, 1999.)*

- **Insertion of a needle**, **abrupt palpation**, or even **a brisk tap** with the fingertip directly over the trigger point may induce a brief muscle contraction **detectable** by the examiner.

- In muscles that move a relatively small mass or are large and superficial (such as the finger extensors or the gluteus maximus), the **response is easily seen** and may cause the **limb to visibly move** when the examiner introduces a needle into the trigger point

- ✓ Accompanied autonomic nervous system reactions:
- **piloerection,**
- **localized sweating,**
- **regional temperature changes in the skin attributed to altered blood flow**

Diagnostic Studies

- ✓ No definitive laboratory test or imaging method is diagnostic of MPS
- ✓ diagnosis is made primarily by history and physical examination
- ✓ predisposing conditions:
  - **hypothyroidism,**
  - **hypoglycemia,**
  - **vitamin deficiencies**

- ✓ Tests maybe helpful:
- complete blood count,
- chemistry profile,
- ESR,
- Levels of vitamins C, B١, B۶, B١٢, and folic acid
- Features of thyroid disease→TSH

Differential Diagnosis

Fibromyalgia
Trochanteric bursitis
Neuropathic pain
Postexercise muscle soreness
Articular dysfunction
Referred pain

Treatment

- biofeedback,
- ultrasound,
- lasers,
- Massage
- Heat
- various forms of muscle and nerve stimulation

- **NSAIDs:**

- Generally considered beneficial when they are used in conjunction with an active exercise treatment program
- no randomized placebo-controlled clinical Trials exist to support efficacy of NSAIDs

- **Diclofenac**, when it is **injected into the MTrP**, was shown to be superior to lidocaine in one small clinical trial

- **Muscle relaxants:**
- ***cyclobenzaprine hydrochloride*** is indicated as an adjunct to rest and physical therapy for the *relief of muscle spasm* associated with acute, painful musculoskeletal conditions

- A higher dose (١٠ mg three times daily) is associated with more somnolence and dry mouth

- Low dose: ٥mg TDS

Rehabilitation

- the most effective treatment of MPS →

- correction of muscle shortening by targeted stretching + strengthening of affected muscles + correction of aggravating postural and biomechanical factors

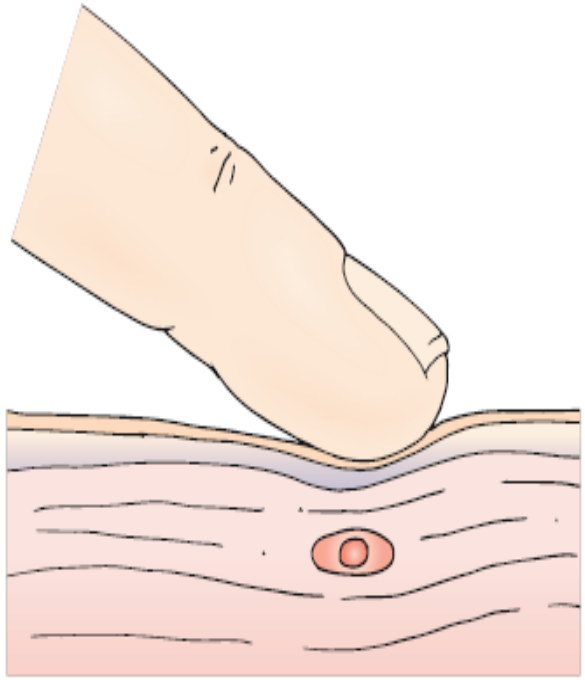
- Due to studies, there is a direct relationship between exercise and MPS

- The **goal of treatment** is **to prevent** the development of **chronic pain syndrome.**

Digital pressure at 45-degree angle introduces ischemic, inhibitory pressure.

Various models exist:

- ☑ Temporarily cuts off circulation, "flushing" tissues when released
- ☑ Inhibition of neural activity
- ☑ Local mechanoreceptors stimulated, producing gating of pain messages
- ☑ Release of local endorphins and brain enkephalins
- ☑ Mechanical stretching of tissues
- ☑ Alters gel-like tissues to softer "sol" state
- ☑ Taut bands associated with trigger point's release
- ☑ Enhanced energy flow according to TCM



Trigger point

FIGURE 104.1 Schematic representation of myofascial trigger point. *TCM*, traditional Chinese medicine. *(From Chaitow L. Modern Neuromuscular Techniques, 3rd ed. New York, Churchill Livingstone, 2011.)*

- ***Chronic MPS***:
- not a diagnosis
- **a descriptive term** for individuals who not only report persistent pain but also evidence poor coping, self-limitations in functional activities, significant life disruption, and dysfunctional pain behavior

- common symptoms of chronic pain syndrome
  accompanying disuse syndrome:
- Insomnia
- Fatigue
- Anxiety
- Depression
- Disability (central feature)

- avoidance of activity based on the fear that engaging in functional activity will increase pain (**fear avoidance**)

Cognitive-behavioral therapy

- To successfully participate in rehabilitation, patients need to ***believe*** the following:

١. The nature of the pain has been thoroughly evaluated, and **there is no cure** (i.e., **surgery** or another **procedure**) **for the pain**

٢. . The **rehabilitation** approach involving **physical activity** and conditioning will **increase functional capabilities** and eventually **reduce suffering**.

٣. The **hurt** engendered **through physical conditioning** will not cause **harm**.

٤.**Reinjury** or **worsening** of the painful condition is **unlikely**, and it is in the individual's best interest to become more functional

Hypnosis

- To **reduce** interacting effects of pain leading to increased **sympathetic arousal** ("*stress response*") that leads to increased muscle tension and increased pain

Mindfulness Meditation

- Another approach to reduce distress and autonomic reactivity in response to pain.

Procedures

- In the treatment of MPS, ***other than trigger point injections***, interventional procedures (e.g., **epidural steroid injections**, **sacroiliac joint injections**, and **medial branch blocks**) are **usually not employed**.

- ***lumbar myofascial pain*** + some component of ***lumbar facet arthropathy*** → Lumbar medial branch blocks and radiofrequency denervation, alone or in combination with the other therapies (e.g., muscle relaxants), may work together to relieve myofascial pain

- **epidural steroid injection:**

١. Provide relief in spondylosis
٢. may be used to treat cervical MPS if conservative treatments fail

Surgery

- Surgery is not indicated in the treatment of patients with MPS

Potential Disease Complications

- Perhaps the biggest complication of untreated and progressive MPS is **development of a syndrome of physical inactivity** that may lead to cardiovascular disease and early death.

Potential Treatment Complications

- **The greatest risk of treatment** of the patent with MPS is Related to MTrP **injections** in the **thoracic area** (pneumothorax)

Thank you

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