



# SPASM

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# SPASM

- ▶ A spasm is an involuntary, sustained contraction of a muscle.
- ▶ A cramp is a common or lay term for a painful, prolonged muscle spasm.
- ▶ A spasm has been described as an involuntary muscle contraction, when measured electromyographically, or as spontaneous motor unit activity. Some terms are also muscle guarding.
- ▶ **Reflex muscle guarding describes a mm spasm in response to P.** This painful stimulus is due to local tissue injury and is present in acute stages of a condition. The mm spasm functionally splints the injured structures, reducing movement and preventing further injury.
- ▶ **Muscle tone has been described as the resistance of a relaxed muscle to passive stretch or elongation.**

# SPASM

- ▶ Tension of mm fibres that tend to shorten, causing them to perform work.
- ▶ Hypertonicity is abnormally high tone usually seen with upper motor neuron disorders.
- ▶ Muscle spindles are the major sensory organs of muscles and aid in the control of muscle movements.
- ▶ Golgi tendon organs are nerve receptors located in the tendons near their muscular attachments. Receptors are sensitive to tension in the muscle, either active or passive movements. When the mm fibres, they inhibit contraction of the mm attached to the tendon containing them and protect the muscle from an overstretch injury.

# CAUSES OF MM SPASM AND CRAMPS

- ▶ P: Inflammation, direct or indirect trauma or infection.
- ▶ Circulatory stasis due to reflex mm guarding
- ▶ An impaired nutritional supply: Decreased calcium intake or loss of sodium, dehydration, electrolyte disturbance
- ▶ A lack of vitamin D: This vitamin helps synthesize enzymes that actively transport calcium, which is needed for normal muscular contraction.

# CALF CRAMPS

- ▶ Cramps in gastrocnemius are associated with pregnancy, vitamin E deficiency, and lack of vitamin B12 during pregnancy.
- ▶ Calf cramps are associated with superior tibiofibular joint hypomobility and potential TP's in the gastroc.
- ▶ Nocturnal calf cramps can occur during sleep due to heavy bed covers. The plantarflexion shortens gastrocnemius and may cause spasms waking the client.
- ▶ Arterial disorders may play a role such as thrombus or embolisms.
- ▶ Deep vein thrombosis can lead to feelings of tightness in the calf.
- ▶ DVT's are common post surgery, pregnancy and prolonged bed rest.

# SYMPTOMS

- ▶ P within the mm due to ischemia and retention of metabolites.
- ▶ Acute trauma and referred P may also cause spasm.
- ▶ Spasm and H<sup>+</sup> are present.
- ▶ Decreased ROM of the joint.
- ▶ Antagonist and synergist mm's are affected, potential TP's may refer P into spasmodic mm.
- ▶ \*\* Please read Observation and palpation, make point form notes on what you will see and palpate, pg 198.

# CONTRAINDICATIONS

- ▶ Do not attempt to eliminate reflex mm guarding that is splinting an acute injury.
- ▶ Avoid passively stretching an acutely spasmodic mm.
- ▶ Hot hydro is CI'd with an acute mm spasm.
- ▶ Massage is CI'd locally with DVT or thrombophlebitis of the calf. Refer to GP. DVT symptoms may complain of calf tightness, or cramping, exhibit local tenderness, heat, pallor, swelling, and have diminished or absent dorsalis pedis pulse. Clients who have had a recent fracture or surgery, pregnancy and or over 50 Years of age.

# TESTING

- ▶ **AF ROM**: P may be present on active movement > so at the end ranges.
- ▶ **PR ROM**: mm reveals mm spasm end feel with P and decreased range.
- ▶ **AR submaximal isometric testing**: reveals decreased strength with P on contraction, Strength testing on an acute spasmodic mm is CI'd.
- ▶ **SOT: Remirez's Test**: Positive for DVT
- ▶ **Homans sign**: Positive for DVT



# TREATMENT

- ▶ **Positioning**: Depends on the location of the affected mm and the clients comfort.
- ▶ **Hydro**: Reflex mm guarding in acute would be local cold applications, ice pack or ice massage. Intrinsic mm spasm occurring chronically hypertonic tissue would be heat. Contrast is also used for intrinsic.
- ▶ Treat compensatory structures, DDB
- ▶ Proximal work to the affected area using effleurage and petrissage.
- ▶ Indirect techniques are used here, GTO, O&I, and mm approximation.
- ▶ Once the spasm has decreased or less painful, on site work techniques are vibrations, shaking, mm squeezing, petrissage and joint play to proximal and distal joints.

# SELF-CARE

- ▶ Hydrotherapy concepts are followed based on the type of spasm.
- ▶ After the spasm has decreased, Pain free AFROM to the joint is indicated but slow, and held longer than 30 secs to lengthen the mm.
- ▶ Active resisted strengthening of the antagonist to increase strength in the weakened mm.
- ▶ DDB to help decrease stress levels.
- ▶ Nocturnal cramps are treated with agonist contraction which is most effective.

# TREATMENT FREQUENCY AND OUTCOME

- ▶ Tx given 2x/week for reflex mm guarding, maintained until progress.
- ▶ Tx 2x/week for 3 weeks for intrinsic mm spasm.