

SHOULDER-HAND SYNDROME

The *shoulder-hand syndrome* generally develops as a reflex dystrophy with accompanying causalgia, characterized by pain in the shoulder. This is also associated with swelling and pain in the hand, on the involved side. Changes in the shoulder joint are identical with those seen in the *Frozen Shoulder Syndrome*. It is thought by some to be a manifestation of reflex sympathetic dystrophy that may follow any painful shoulder lesion, but it has also been noted to arise as incidental sequelae of myocardial infarction, pleurisy, various kinds of painful intrathoracic lesions, cerebrovascular accidents, trauma, rupture of a cervical disc, or cervical arthritis.

The *shoulder-hand syndrome* begins to emerge as the patient persists in keeping the shoulder and shoulder girdle immobile. Disuse of the involved muscles brings on a progressively painful stiff shoulder. Uniform edematous swelling of the hand begins to develop and finger joint motion becomes progressively limited. The mechanism postulated to be responsible is a reflex-like response to pain sensation by sympathetic nerves, which communicate with the involved sensory nerve in the internuncial pool in the spinal cord. The sympathetic nerves respond to the distally occurring pain by triggering a reflexive efferent reactive vasomotor action in the involved region. This effectively reduces blood circulation to the tissues perceived to be involved in the pain pattern.

The changes in the hand brought on by the *shoulder-hand syndrome* progress in three stages: (1) the patient complains of a *burning* pain in the hand, which is coincidentally either cold and clammy or cold, red, moist, stiff and superficially sensitive to touch or pressure; (2) the hand appears white and creaseless, the skin thickened, and the hand is increasingly cold and stiff; (3) the hand appears pale and thin, and there is muscular atrophy (guttering) with contractures of the joints (osteoporosis may become evident with x-ray). At the end of this process the hand and arm is generally useless and nonfunctional.

Treatment

Treatment of the *shoulder-hand syndrome* centers around relieving the provocative cause (if ascertainable), increasing peripheral circulation, eliminating any inflammatory process, regaining lost muscle strength, relieving myogenic pain and encouraging motion of the hand and shoulder. Soft tissue manipulation (adhesion breaking), and joint manipulation and stretching may be necessary to recover lost ranges of motion.

It should be noted that electrical stimulation, when applied appropriately, may be used to increase capillary density in the involved extremity, and therefore should be effective for reversing the vascular component of the syndrome, even late in the game.

Application:

- If muscle atrophy is present, preset an electrical stimulator to deliver a medium frequency current with a 10-second on, 10-second off duty cycle. Place a negative electrode over the triceps or biceps muscle group and a positive electrode over the wrist extensor or wrist flexor muscle group. Increase the stimulator amplitude to the point that near tetanic contractions occur in the muscle groups stimulated. For best toning effects, have the elbow and wrist joints held in position to resist the force of the muscular contractions produced by the stimulator. Stimulate 10 minutes.
- To increase capillary density, and thereby capillary circulation, preset the stimulator to produce a 7 Hz, wide-pulsed galvanic current and stimulate for 20 minutes. Adjust the amplitude to a point high enough to produce visible rhythmic contractions in the muscles stimulated (the joints may be free to move).

Treatment sessions should occur several times a week for several weeks. To double the capillary bed density, daily sessions of the pulsed electrical stimulation should continue for a month.

Trigger Points

The following trigger point formations may, singly or in combination, refer pain into the area of the shoulder, arm or hand: Levator scapulae, Scalenus, Scalenus (minimus), Infraspinatus, Infraspinatus (abnormal), Medial teres major, Lateral teres major, Teres minor, Coracobrachialis, Lower splenius cervicis, Upper trapezius [B], Middle trapezius [A], Middle trapezius [B], Middle trapezius [C], Lower trapezius [A], Cervical multifidus (C4-C5), Supraspinatus (muscle), Supraspinatus (tendon), Latissimus dorsi (upper portion), Serratus posterior superior, Serratus anterior, Subclavius, Subscapularis, Posterior deltoid, Anterior deltoid, Pectoralis major, Pectoralis major (sternal portion), Pectoralis minor, Sternalis, Rhomboids, Medial triceps (deep fibers), Medial triceps (lateral fibers), Lateral triceps, Triceps (long head), Distal medial triceps, Anconeus, Biceps brachii, Brachialis, Supinator, Extensor carpi radialis brevis, Extensor carpi ulnaris, Middle finger extensor, Ring finger extensor, Palmaris longus, Flexor carpi radialis, Flexor carpi ulnaris, Brachioradialis, Pronator teres, Extensor indicis, Flexor digitorum sublimis (radial head), Flexor digitorum sublimis (humeral head), Flexor pollicis longus, Abductor digiti minimi, Second dorsal interosseus, Opponens pollicis, Adductor pollicis, First dorsal interosseus, Multifidus (T4-T5), Iliocostalis thoracis (T6), Iliocostalis thoracis (T11), and Extensor carpi radialis longus.