It's the Fascia, Stupid by Dr. Warren I. Hammer

Bill Clinton used the campaign slogan, "It's the economy, stupid," to help defeat George H.W. Bush in the 1992 presidential election. The sooner the chiropractic profession recognizes the importance of fascia and its treatment in the world of soft tissue, the sooner will we receive the recognition we rightly deserve.

No need to hash over the value of the chiropractic adjustment, but when will we open our eyes and recognize the world of soft tissue and especially the most ubiquitous of all soft tissue, the fascial system? Maybe I should say the fascial *organ*, which one day it will be designated as. The fascial system is a neurosensory organ that must be considered along with chiropractic neurology. Why depend on one modality with our hands when we can have an even greater effect by including soft tissue?

Most chiropractic colleges still do not pay enough attention to the soft-tissue world. I feel sorry for their graduates, our profession and most of all, our patients. I have seen too many patients over the years treated with spinal manipulation for extremity and spinal lesions, to no avail. I have written about studies that repeatedly show spinal manipulation plus soft-tissue treatment is more effective than spinal manipulation alone.

I recently viewed a DVD on fascia "research pioneers" that includes lectures by Carla Stecco, Helene Langevin, Serge Gracovetsky, Tom Myers, Andree Vleeming and Robert Schleip. I recommend this DVD for anyone interested in an introduction to the fascial system or anyone who has benefited their patients by using soft-tissue methods that have a fascial effect. Much of what this article is about is derived from this DVD, especially the lecture by Robert Schleip, PhD.

It seems that the rebirth of fascial inquiry occurred at the First International Fascia Research Congress at Harvard Medical School in Boston in 2007. Over the past few years, there has been a tremendous increase in the number of MEDLINE-indexed publications with the term *fascia* in their title or abstract.

Scientists have traditionally ignored fascia, possibly because of its extensive expansion throughout the body. Anatomists usually just cut away the "white stuff." Recently, ultrasound has been used to determine *in vivo* its thickness, sliding and motion; and histological studies have proven that fascia is a sensory organ.

Fascia was defined at the First Fascia Research Congress as "the soft-tissue component of the connective tissue system that permeates the human body, forming a whole-body continuous three-dimensional matrix of structural support. It interpenetrates and surrounds all organs, muscles, bones and nerve fibers, creating a unique environment for body systems functioning."

"Fascia serves both global, generalized functions and local, specialized functions"[1] **As far back as 1964, Dittrich**[2] referred to "rupture of the lumbodorsal fascia, with subsequent fibrosis of the subfascial tissues and adhesions between these structures." And as recently as 2009,[3-4] connective tissue fibrosis has shown to be causative. Just go to **www.pubmed.com**, the Web site of the National Library of Medicine, and put in Stecco, fascia; and at least 43 studies on fascia will appear.

Fascia has the ability to move; it can contract and relax on its own. The myofibroblasts originate from normal fibroblasts stimulated by mechanical tension and specific cytokines such as TGFß-1. Myofibroblasts are composed of alpha smooth-muscle actin, allowing these cells to maintain a contractile force over long periods with little energy expenditure. They are increased normally in dense connective tissues like joint ligaments, menisci, and tendons; and abnormally increased in Dupuytren's contracture, plantar fibromatosis, excessive scar formation, frozen shoulder, and lumbar fascia.

So, the frozen shoulder may be similar to a "frozen back," in that the causative restriction is due to increased myofibroblasts in the fascia rather than the muscle. The density of myofibroblasts correlates with tissue stiffness. A high density of myofibroblasts is often found in the perimyceum that separates muscle bundles from each other, which may be a reason why the upper trapezius is often tight, since this

muscle tends to have a thicker perimyceum. Fascial adhesions occur due to inflammation, immobility and micro-injuries caused by overloading.

Fascia is also a sensory organ that responds to mechanical stimulation. **Schleip discussed the fascial mechanoreceptors** and their role in deep-tissue manipulation,[5] and the influence of fascial manipulation on mechanoreceptors such as Pacini, Paciniform and Ruffini (Type II), interstitial Type III and IV, and proprioceptives such as Golgi (Type Ib), and spindle cells. Increasing receptor stimulation input strongly inhibits spinal cord processing of myofascial nociception. Receptor stimulation has shown its effectiveness in pain reduction with elastic taping and apparel that mimic the skin.

High velocity stimulates Pacini, located in spinal ligaments and facet joints of spine. The tangential angle of direction, rather than a perpendicular or longitudinal directed force, is more effective than the amount or duration of force in creating a global inhibition of sympathetic tone. Sympathetic activation (stress) can cause increased TGFß-1, resulting in increased myofibroblastic activity and fascial stiffness due to the manufacture of stiffer collagen matrix over time.

Treatment involving slow, gradual fascial release (Barnes) or lighter "melting" techniques stimulates Ruffini receptors that inhibit sympathetic activity, reducing a global sympathetic state to a global parasympathetic (relaxing) tone. Other methods such as friction massage or fascial manipulation also affect receptors, of course, but work on the premise of amount and duration of force and particular locations based on functional testing. Depending on how you use Graston Technique, both light and more forceful technique can be used.

A recent study points to fascia as the painful mechanism in **delayed-onset muscle soreness**.[6] Another recent (unpublished) study by Franklyn-Miller studied strain transmission during straight leg raising. One would think that the hamstrings would present with the most tension during this maneuver, but with the hamstring tension rated at 100 percent stretch, the iliotibial tract (ITB) percentage reached 240 percent the ipsilateral lumbar fascia was 145 percent, lateral crural compartment was 103 percent, the Achilles tendon was 100 percent, and the plantar fascia was 26 percent. The collagen covering epimyceum on the lateral ITB was parallel and dense, while the posterior fascia on the hamstring was more criss-cross, allowing more freedom.

Based on the study of the connective tissue, it may be more important to stretch and treat with soft-tissue methods the lateral extremity structures and ipsilateral lumbar fascia, rather than the posterior connective-tissue fascia of the hamstrings.

References

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