Massage Today
July, 2001, Vol. 01, Issue 07

When Is It Tendinitis?

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Tendinitis is one of the most common diagnoses for soft tissue pain resulting from repetitive motion. As repetitive motion disorders have dramatically increased, so has the incidence of tendinitis.
However, recent investigations into the cellular nature of tendon pathologies have brought forth interesting discoveries that may alter the way tendinitis is treated. In this month's column, let's take a look at some of these fascinating discoveries.

The first stop along the way is to take a closer look at the anatomical and biomechanical characteristics of tendons. Tendons are connective tissue structures that are primarily composed of collagen and elastin fibers. Collagen fibers primarily give the tendon its strength, and elastin fibers give it a small amount of flexibility.

Since the tendon fibers are primarily designed to transmit a strong tensile (pulling) load from the muscle directly to the bone, the tendon is not designed to be very flexible. If it were very flexible, much of the muscle's contraction force would be absorbed by the tendon and not transmitted to the bone. It would be like trying to pull a heavy object across the floor with a bungee cord instead of a rope.

The tendon gets its strength not only from the quantity of collagen fibers it contains, but also from the arrangement of the fibers. In tendons, the collagen fibers are arranged mostly in a parallel direction, in line with the direction of the muscle fibers. This arrangement will give the tendon the greatest amount of strength in the direction that the muscle fibers are pulling. Ligaments, on the other hand, have a greater quantity of elastin. In ligaments, the collagen fibers are arranged in a slightly more random fashion to give the ligament strength against forces in several different directions.

Tendons throughout the body are surrounded by a thin connective tissue membrane called the paratenon. The paratenon is primarily designed to reduce friction forces between the tendon and other surrounding structures.[7]

Tendons in areas such as the distal extremities are exposed to much higher friction forces, as the tendons bend around the joints and are held closely by retinacula. These tendons are surrounded by an additional connective tissue layer called the epitenon. The epitenon is commonly referred to as the tendon sheath. Keep in mind that not all tendons have the tendon sheath, only those exposed to specifically high friction forces against adjacent structures, like a binding retinaculum. In some instances, an inflammatory condition will develop between the tendon and its sheath. This usually occurs from excessive friction. Adhesions may also develop between the tendon and the sheath. This condition is called tenosynovitis. However, in order for tenosynovitis to be present, the tendon in question must have an epitenon (sheath).

In some instances a diagnosis of tenosynovitis may be made because of an observed fibrous adhesion between the tendon and the paratenon but there is no tendon sheath. This happens commonly with the Achilles tendon.[3] It does not have a synovial sheath (epitenon) but its paratenon is quite visible. Degeneration or adhesion of the paratenon or tendon fibers in this instance is not tenosynovitis. For many years, the term tendinitis has been used to describe painful overuse conditions of the tendon. It has been thought that the pathology involved the tearing of individual tendon fibers and a subsequent inflammatory response in the tendon. Treatment, therefore, has focused on the inflammatory nature of the problem. However, a number of recent scientific investigations into the nature of overuse tendon injuries have painted a very different picture.[1,2,5,6]

In these investigations, most tendinitis complaints have been found to be devoid of inflammatory cells. It appears that tendon fiber tearing is not the primary part of the problem. The main problem in these overuse tendon disorders appears to be collagen degeneration from overuse. It has also been suggested that this would explain the frequent lack of success in treating tendinitis complaints with anti-inflammatory medication. Numerous authors and clinicians have suggested that the term "tendinosis" (literally meaning "pathology of the tendon") is a much more appropriate term than "tendonitis," which specifically indicates inflammation.

So what does this mean for the treatment of tendinitis with massage? The good news is that these findings are an even stronger support for the benefits of massage for treating these overuse tendon injuries. Collagen degeneration is a primary part of most tendinosis pathology. Therefore, what is needed is a treatment that can help stimulate collagen production in the healing process.

Interestingly, several recent studies have found that the primary benefits of deep friction massage may be the stimulation of collagen production in damaged tendon fibers, rather than the breaking up of fibrous scar tissue in chronically inflamed tendons as previously thought.[4] We have known clinically for years that massage works well in the treatment of tendinosis; now we may be closer to understanding why.

References:

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