



SENIOR HEALTH

Knee Osteoarthritis: Addressing the Key Connective Tissue With TCM

Osteoarthritis (OA) is the most common joint disorder and the major cause of disability in the adult population. The pathophysiology of the disease is characterized by progressive loss of articular cartilage, cartilage calcification, osteophyte formation, subchondral bone remodeling, and mild to moderate inflammation of the synovial lining. Simple "wear and tear" due to excessive use as the underlying cause of OA is somewhat of an outdated explanation for the role of mechanical overload / injury in OA development.

Conventional treatment is focused on pain reduction using NSAIDs, local injections of glucocorticoid or hyaluronan, and in severe bone-on-bone cases, joint replacement surgery.

Osteoarthritis: What's Going on Inside the Knee?

The chondrocyte is the single cell within cartilage that is responsible for developing and maintaining the cartilage matrix. It synthesizes and secretes collagen, which is the backbone of the cartilage; and proteoglycans, which functions as the cushion of the joint. When there is cartilage damage, the chondrocyte will synthesize new molecules to repair the damage. However, if there is too much damage, it will work in a disruptive way. The development of OA is highly dependent upon the upregulation of specific matrix-degrading enzymes. The major protagonists of cartilage degradation are the metal-dependent matrix metalloproteinase (MMP) synthesized by the chondrocytes.



Damaged cartilage tissue, inflamed synovium, and other injured joint tissues release cytokines, chemokines, alarmins, DAMPs, adipokines, and other mediators into the synovial fluid. These mediators increase chondrocyte production of MMPs, which breaks down the cartilage collagen network and weakens the biomechanical function of the articular cartilage, leading to OA.

TCM Herbs for Knee OA

Due to the high risk of side effects with conventional treatment, integrative therapies are now being favored heavily. The use of TCM in the treatment of arthritis has been empirically tested and refined over thousands of years in Asian countries.¹ TCM exerts analgesic, anti-inflammatory and blood circulation effects that not only help eliminate the pain, but also target the condition at the root cause.²⁻³ This is because these three factors reduce synovial inflammation, increase nutrient supply, and activate chondrocyte proliferation to synthesize and secrete collagen and proteoglycans to rebuild the knee cartilage.

Through the use of external herbal patches, many practitioners can effectively and successfully address knee OA. Herbal ingredients such as *Niu Xi* promote chondrocyte proliferation by activating the Wnt/B-catenin signaling pathway.² Increasing the number of chondrocytes helps to rebuild the extracellular matrix, which directly affects joint movement and provides lubrication.

Du Huo inhibits articular cartilage damage, synovium inflammation and chondrocyte apoptosis, and inhibits the release of inflammatory mediators.³ By decreasing levels of inflammatory mediators, the body can stop its attack against the cartilage tissue by reducing the amount of MMPs. Decreasing synovial inflammation also better allows nutrients to diffuse into the synovial fluid and reach the cartilage tissue.

Case Study: Successful Resolution of Bone-on-Bone Knee OA

A 92-year-old Hispanic female presents to Dr. Marco Cazares with complaints of chronic knee joint pain, with difficulty bending, walking, getting up from a chair, and nocturnal pain. The patient describes severe joint pain, with a swelling of the inner and outer aspect of the knee joint capsule, with a pain intensity level of 8 out of 10 (10 being the worst).

For ambulation, the patient uses a walker and can only walk for approximately 10-12 minutes before having to stop for rest. For relief, the patient has been prescribed diclofenac, tramadol, and naproxen sodium, but due to the side effects of these medications, the patient has stopped using them and relies mainly on ice packs and a knee brace. The patient is worried that her condition is getting worse and she does not want to have knee surgery.

The patient has been seen by two orthopedic surgeons and has had extensive physical therapy. Her last orthopedic evaluation recommended partial knee replacement for her right knee, with a possibility of a repeat knee surgery on her left knee. The patient has notable findings for severe osteo-degeneration type III/IV, with near bone-on-bone joint arthritis. Both MRI and X-rays are consistent with her exam findings.

The patient has the option of surgical intervention; however, the risks outweigh the benefits for a person of her age. Her other option is to commence on a trial of transdermal herbal patches consisting of *Niu Xi*, *Du Huo* and 18 other herbs, in conjunction with an oral herbal formula consisting of American ginseng and two other TCM herbs that enhances microcirculation to the joints. There are no reported side effects with these formulas.

After a family consultation, the patient elects to try a conservative approach using Chinese medicine. After eight weeks using transdermal medicinal patches applied to the inner and lateral aspect of the knee, the patient notes substantial relief in joint pain and swelling, with improvement in range of motion. The patient wore the patches for 48 hours, with a rest of 24 hours in between patches, and used approximately 12 patches. The patient can now bend/extend her leg without pain, with flexion much improved between 70 and 120 degrees, measured bilaterally.

As for activities of daily living, the patient has returned to sweeping and mopping her own house, doing dishes, vacuuming, and even walking around her complex. She is proud to report that she can now walk three times around her complex, which is equivalent to three city blocks, and despite this effort, she has no joint swelling. The patient also states that she no longer experiences nocturnal pain. She is extremely happy with the results.

Re-evaluation of this patient revealed an improvement of joint articular height, which was consistent with MRI findings, decreased joint effusion and apparent changes in the articular structure. Her results are rated as good to excellent.

References

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