Dynamic Chiropractic

DIAGNOSIS & DIAGNOSTIC EQUIP

Simplifying Lower Extremity and Lower Back Diagnosis by Understanding the Effects of Foot Overpronation

William D. Charschan, DC, CCSP

Dr. Charschan has been the medical director of USATF New Jersey for the last five years. He has been actively involved in the ACA and NJ Sports Council's and specializes in lower extremity problems. He has lectured on biomechanics to the membership of the New Jersey Chiropractic Society and other regional chiropractic organizations.

The Basic Pronation Accommodation Pattern

In my previous article published in Dynamic Chiropractic ("The Basic Pronation Accommodation Pattern," June, 17, 1996), I discussed common findings in the leg and back from a lifetime of overpronated feet. It has been published by Rothbard and others that the mechanics of the leg are altered by foot overpronation. The skeletal effects include clockwise rotation of the kneecap, internal rotation of the femur with external rotation at the hip socket and internal rotation of the tibia, which worsens as the degree of forefoot eversion increases from the midline.

Do you Really Understand Leg Dysfunction?

Understanding Patterns of Dysfunction in the Leg or the Basic Pronation Accommodation Pattern

It is an easy concept to understand that the leg is a system of pulleys (from an engineering standpoint). The more everted the foot is (flared away from the midline), the more improper the bony alignment of the leg and the earlier the patient can expect to have symptoms from this in their life. It is well accepted that when children begin to walk, their feet are rotated in; when the kids are five or six years old, the feet rotate out. In some children, either one or both feet rotate out too far, changing the biomechanics of how the leg works, leading to predictable pain syndromes later in life. Genetics has a large part in determining the degree of foot overpronation. In my clinical experience, the arch height has less to do with leg dysfunction than the amount of foot eversion.

The basic pronation accommodation pattern consists of significant shortening, stiffness and weakness of all the leg muscles and lower latissmus dorsi, quadratus, psoas/iliacus and erector spinae on the involved side with positive SLR showing decreased hip flexion, decreased hip internal rotation, psoas weakness of the side of foot overpronation. Once you spot the foot eversion and the quadriceps weakness in correlation with the symptoms, you can predict the rest.

Foot overpronation changes the angle these muscle's pull at, creating an inefficient series of pulleys with a predictable outcome: pain. In the last few months, different physicians have published articles in Dynamic Chiropractic trying to get chiropractors to understand how foot problems create back pain and why they need to recommend orthotics when indicated. I have found their explanations to be accurate, although difficult to understand conceptually. Leahy, in his Cumulative Injury Cycle, extrapolated that soft tissues go through predictable changes from

repetitive strain, causing the involved tissues to weaken and become painful as they shorten and become less flexible, or ropelike. As a physician, if you understand the fact that this is a pulley system, and overuse (through genetically poor biomechanics) will cause these tissues to shorten and weaken due to adhesions and scar tissue, you can now understand to a much greater degree what leg and back syndromes really are: an expression of foot pathomechanics. To be good at evaluating and treating these syndromes in a cost effective manor, you must understand that this is a "pattern of dysfunction" which is predictable. In other words, foot overpronation has a predictable way that it effects the skeletal system and the muscles and other structures which surround it. Once you know that the pattern exists in the patient you are examining, you can actually tell the patient what you are going to find prior to finding it.

Get the Most from Your Consultation

During consultation, typical symptoms imply that you are dealing with a foot related problem such as 1) pain in the groin or side of leg running into the area of the kneecap; 2) leg goes numb when sitting for long periods of time; 3) one-sided back pain which grabs them (latissimus dorsi involvement); 4) shin or calf pain; 5) leg feels weak when going up the stairs; 6) previous attacks of pain, or they talk about "my sciatica," indicating chronicity.

Know What You are Going to Find Prior to Finding It

Your examination should start the minute the patients stands up and starts to walk. Do you see either one or both feet flared out (everted)? If they are, is one more everted than the other? How does this correlate with your consultation? Is the more painful side the same side as the everted foot? When doing the ranges of motion in the examination in the lower back, hold the patient's hips in place when they laterally bend and rotate. I usually point out the restrictions and the pattern, if one exists, so it makes sense to the patient that these areas of tightness are not a coincidence. If rotation and lateral flexion are tight in the same side of the back and leg pain, you should be 90% sure the problem is foot related. Test the quadriceps. I usually tell the patient at this point "if the quadriceps are weak, or the leg feels like it will give out when the quadriceps are tested on the side of lower back pain, this is a foot problem. Incidentally, all the other leg muscles on that side will also test weak, and you can demonstrate this to the patient with great certainty. You can then show them that same leg will be tighter than the other one during the SLR test. By this time, you will realize that this is highly reproducible since the effects of lifetime foot overpronation are predictable. Internal rotation of the hip joint will be restricted or guarded and so will the Patrick-Fabre test when showing hip flexibility. The psoas test will also be weak on the overpronated side.

Showing the Patient the Effect of Foot Overpronation

I then use a basic figure 8 wrap on the foot (in neutral), and then run through the SLR, hip external rotation and Patrick-Fabre tests. You can show the patient how the leg loosens about the hip and the SLR improves with the tape on. Then have the patient notice any changes with the tape on vs. tape off. Most patients will notice some differences such as increased lumbar flexion, less pain in the leg and hip, improved walking ability. Some patients are thickheaded and you must point out these changes to them more than once. If they still don't notice any difference (some may not), take the tape off and have them bend and touch their toes. It will be tighter and more difficult for them without the foot supported in neutral.

Caste for Orthotics

If you determine that the back and leg pain originated in the foot, you must tell them they need orthotics and they are mandatory. The orthotics do what the tape does but they should do a better job. If they wear orthotics and the tape feels better than their orthotics, this often means the orthotics are not corrective enough and need to be either reposted (adjusted so they correct for

overpronation) or replaced. The reason I tell them they are mandatory is because even of you treat their leg and back, an overpronated foot will cause the pain syndrome to reproduce itself over time and will cause eventual arthritic degeneration of all joints involved. Side note: I have never seen a patient with hip or knee replacements who did not have overpronated feet. My experience tells me there is a direct correlation which should be studied in the future.

Treat the Pattern, Not the Back or Hip Pain

I have found myofascial release techniques or Leahy's active release techniques to be extremely effective and reliable in the treatment of this condition, in combination with spinal and extremity adjustments. Typically I would treat the entire pattern of involvement (major muscle groups in the leg, back and buttock vs. just the back, because foot problems encompass the entire leg). Typically, you'll find the following: an adhesion of the sciatic nerve at the piriformis, adhesions in the gluteal muscles, peroneals, tibialis, gastroc, popliteus, psoas, iliacus, hamstrings, quadriceps, lumbar erector spinae, quadratus and latissimus dorsi insertions. When a patient is having acute back pain, I typically start with treating the latissimus dorsi insertion, psoas adhesions which often gives great relief on the first visit. Then on succeeding visits, I treat the areas of the hip, thigh, butt and other involved muscles in combination with spinal adjustments. Providing there are no underlying complicating factors (e.g., herniated disc, severe arthritic changes), the outcomes are excellent.

Rehabilitation

A great low tech, cost effective way to rehabilitation lower back is using the roman chair. At a cost of $150, it is a great way to help a chronic lower back case strengthen their lower back and abdominal muscles while they are in your office. Since myofascial release is much more effective when used in combination with exercise protocols, this can significantly improves your outcomes. Balancing exercises can help strengthen the lower extremity and older exercise programs such as William's Protocol can actually be eliminated when myofascial release and exercise are used. Patients who previously relied on morning exercises to looses up will find that these routines are no longer necessary for their sense of well-being.

In Closing

Treating the basic pronation accommodation pattern makes much more sense than treating the back pain when the feet are involved because there is global involvement of the muscular structures of the leg. Myofascial release is a reliable and cost effective means to achieve good results in a relatively short period of time. Your patients also must understand the importance of foot orthotics and why they need them. If they do not know why, they will not comply. Patient are impressed when you start to tell them what you will find prior to finding it and you will have greater compliance from a patient who understands the functional nature of their foot problem. Personal experience will show you many common sciatica cases which are treated by your office have a relationship to the feet, even when a herniated disc is involved. Once you get good at evaluating these types of conditions, you will be able to tell what you are dealing with usually by the time the consultation is over. You will be a better diagnostician of lower extremity and lower back problems and by treating the pattern of dysfunction, will achieve better results with better long-term outcomes.

William Charschan, DC, CCSP
No. Brunswick, New Jersey

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