When Heel Pain Is Not Plantar Fasciitis

Consider the wide variety of differential diagnoses.

BY PAUL SCHERER, DPM

Clinicians can consider the differential diagnoses before making a pair of orthotics for plantar fasciitis or after the orthotic fails to relieve the symptoms. Before is always better and more efficient, but everyone must accept the premise that there are zebras when treating this condition.

For several years, I attended at a special problems clinic that allowed podiatrists to send their patients for consultation when their orthotics did not work for pathologies that usually responded to custom orthotics. The majority of these patients were treated for heel pain and plantar fasciitis but did not improve. Some of these patients had clearly received inappropriate or poorly casted and manufactured orthotic devices but surprisingly, many of the patients had good orthotics but did not in fact have plantar fasciitis.

Few podiatrists do a proper differential diagnosis when encountering heel pain because it is such a common disorder. It is an accepted concept in medicine, "If you hear hoof beats, think horses, not zebras." But that doesn't mean there are no zebras in our world and maybe you should know what they look like and where they come from.

In the world of heel pain, here is the zebra list that every student in the special problems clinic was required to learn. You can either review it before making the diagnosis and orthotic, or after the orthotic fails. None of these diagnoses is compatible with mechanical control.

Alternative Etiologies to Heel Pain

- Spondyloarthropathy (SpA)
- Rheumatoid arthritis (RA)
- Rheumatoid arthritis (JRA)
- Systemic lupus erythematosus (SLE)
- Neuropathy
- Vascular impairment
- Trauma
- Gout
- Tumors
- Calcaneal cyst

Spondyloarthropathy

This is a group of so-called seronegative arthropathies, all of which present with heel pain in various forms and ages. The following is a brief discussion of each and what the literature tells us about this disorder and heel pain.

Ankylosing Spondylitis

This is a strongly genetic disorder that the literature suggests occurs when the HLA-B27 gene is turned on by klebsiella or another GI infection. The pathology is joint fusion and bone production, particularly in the lower back, along with enthesis of the medial tubercule of the calcaneus (Figure 1). A 1995 paper presented three cases of young males with heel pain who were treated with injections and orthoses for approximately one year before the HLA-B27 test was performed and the patients properly diagnosed and treated.[1]

Figure 1: Enthesis in a young patient with ankylosing spondylitis (Scherer)

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Reactive Arthritis

This disorder was called Reiter's syndrome until Dr. Reiter was recognized as an individual who performed human experimentation on prisoners at the Buchenwald concentration camp.

Continued on page 90

Heel Pain *(from page 89)*

The disorder is an autoimmune reaction, possibly also related to the HLA-B27 gene's reaction to chlamydia, gonorrhea, and more commonly HIV infection. Symptoms appear as conjunctivitis, urethritis and arthritis. A 1983 review in *Rheumatology International* listed asymmetrical heel pain as the second most common (44%) presenting symptom.[2] A later 1993 paper of 143 patients demonstrated that 36% presented with unilateral heel pain.[3] This disorder is why non-mechanical heel pain is listed as a presenting symptom of HIV infection.

Enteropathic Spondylitis

This disorder is recognized as an arthropathy that is often concurrent with inflammatory bowel disease, ulcerative colitis, and Crohn's disease. The pathology is not fully understood, but GI infection may exhaust the largest immune system in the body, leading to bowel symptoms and possibly arthritic symptoms. A 2011 paper revealed that even before the GI infection is evident, or diagnosed, patients present with knee pain (65%) upon their first step in the morning (62%).[4]

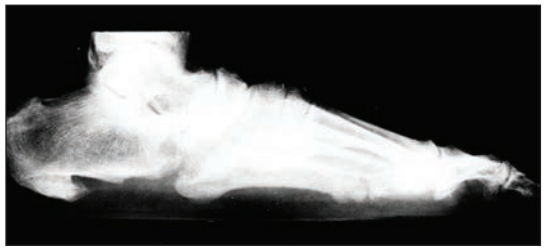

Figure 2: 50-year old patient with a 20-year history of psoriatic arthritis (Scherer)

Psoriatic Arthritis

This is another seronegative autoimmune reaction that researchers suspect happens when there is a peptide defect of the 6th chromosome. Only 25% of the patients that have the skin lesions develop arthritic symptoms, but of this group fully 54% report heel pain (Figure 2).[5]

Anterior Uveitis

This is a rare arthropathy that is associated with an eruption of chicken pox or herpes simplex. The literature shows that often the patient will seek medical care for heel pain, causing an antalgic gait, before seeking eye care for their uveitis.[6] Heel pain, in children, is rarely mechanical; when associated with what appears to be conjunctivitis, it must be investigated for this disorder. Treating the heel pain is of no value to the patient.

Systemic lupus erythematosus affects nine times more women than men and presents as a non-erosive arthritis, a photo sensitivity cheek rash, and a 35% chance of heel pain.

Rheumatoid Arthropathies (SeroPositive)

The American College of Rheumatology in 2011 documented that presently 7,416,000 individuals in the United States are treated for one of the five major presentations of these diseases. This leaves 500 patients for each podiatrist in the United States. Many present before diagnosis with symptoms of heel pain, or heel pain becomes a significant part of their presentation after diagnosis. The following describe the diseases and the incidence of heel pain.

Rheumatoid Arthritis (RA)

This "autoimmune" arthritis produces synovitis, pannus formation and nodules (Figure 3) as a pathology, causing joint destruction and severe foot disability and deformity. A 1979 survey demonstrated that although the pathology occurs within the foot joints, 21% of the population experience daily heel pain.[7]

Childhood Rheumatoid Arthritis (JRA)

The etiology of this disease in children continues to be a genetic mystery. The term "autoimmune" is also applied to this predominantly Caucasian female disease which begins between the ages of 7–12. The same joint pathology as RA exists and more often than not it involves muscle spasm, which affects the lower extremity, producing a wide variety of symptoms and deformity. The most common is digital dorsal subluxation in the toes and spindle fingers in the hand.

A 2010 Canadian cohort study of 319 patients with JRA demonstrated two important findings. First, 95% of the patients had a presenting symptom of a limp and 95% of the patients had heel pain. Second, if a patient presented with a symptom of a limp, there was a short duration to confirming a diagnosis, while if they had heel pain, it took twice as long to make the diagnosis of RA.[8] Someone had been dropping the ball. Children between 7 and 12 do not get plantar fasciitis. This is a huge clue to appropriate diagnosis and treatment.

Figure 3: Rheumatoid nodules in the calcaneus causing heel pain (Source unknown)

fractures similar to those that occur in the vertebrae of patients with this disease.[9] Many of these women are immediately post-pubescent and should not first be suspected of having plantar fasciitis, which is extremely rare in this age and gender population.

Neuropathy

This etiologic category contains

Continued on page 91

Heel Pain *(from page 90)*

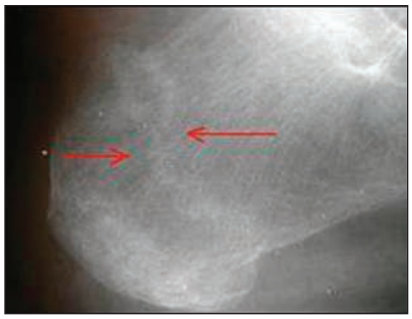

Figure 4: Stress fracture of the calcaneus (Source unknown)

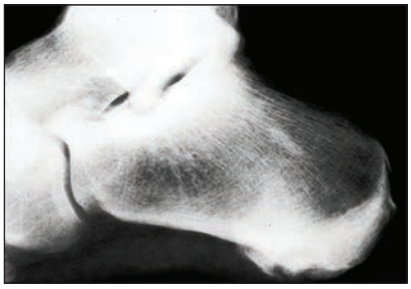

Figure 5: Enthesopathy fracture following a vertical fall (Scherer)

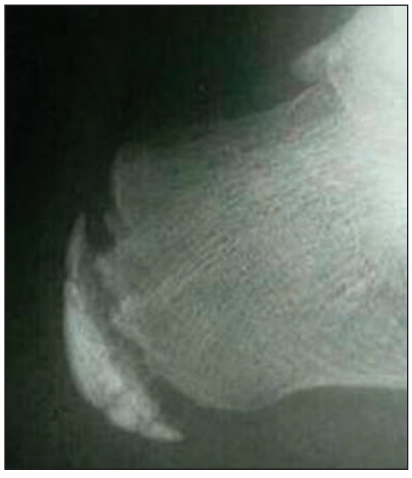

Figure 6: Apophysitis causing heel pain in an adolescent (Scherer)

four subjects that most podiatrists are familiar with identifying before assuming that heel pain is the result of plantar fasciitis. The following review identifies the literature that may be helpful in a greater understanding of how each etiology clinically presents.

Tarsal Tunnel Syndrome (TTS)

Non-weight-bearing dorsiflexion of the foot, when the patient is prone, can reproduce heel pain caused by TTS. One paper published in 2002 identified heel pain as a consistent hallmark of TTS.[10] This is one etiological factor that might be helped with orthotics, although it is masquerading as plantar fasciitis.

Neurilemmona

This enlargement of Schwann cells in the myelin sheath of the tibial nerve has been suspected of causing heel pain. It is suspected of that irritation from repetitive motion and certain sporting activity causing the pseudo-tumor; the pressure on the axion causes the heel pain.[11]

Trauma

The three traumatic events producing heel pain are also familiar to most podiatrists, but not always before first thinking plantar fasciitis. Stress fractures (Figure 4), enthesopathy fractures (Figure 5), and apophysitis (Figure 6) all have a hallmark of progressive pain on walking, where plantar fasciitis is quite the opposite.

Gout

Rarely do practitioners think of gout when considering heel pain, but this systemic disease is one of the most common camouflaged diagnoses. The use of hydrochlorothiazide, alcohol abuse, and renal failure often produce atypical gout pain in the heel with the hallmark that the pain is the same intensity weight-bearing or not.

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Infracalcaneal Nerve Neuropathy

In a study of twenty-two subjects with acute and first-step heel pain, EMG demonstrated obstructive signals to the first branch of the lateral plantar nerve.[12] Often this is erroneously referred to the medial calcaneal nerve, which has little to do with heel pain. Heaslet, in a very interesting and important paper on heel pain, identified the entrapment of the lateral calcaneal nerve as producing heel pain.[13]

Vertebral Stenosis

Foraminal obstruction at L4 and L5 produces lateral stenosis, which can put pressure on the proximal sources of the saphenous nerve. This produces pain at its terminal branches near the heel, presenting as heel pain in older mobile populations. This is usually accompanied by a stocking-type paresthesia. Straight leg raises usually reproduce the pain and exacerbate the paresthesia.

Vascular Impairment

Vascular impairment to the calcaneus is rare and usually obvious. The literature has reported vascular infarcts to the calcaneus and occlusive claudication of the distal portion of the popliteal artery, producing acute heel pain.[14]

Tumors

Only 3% of osseous tumors occur in the foot, and benign lesions outnumber malignant lesions by 5:1. W B Kilgore's text "Calcaneal Tumors and Tumor-Like Conditions" is the classic and still relevant guide to calcaneal tumors. Every podiatrist should possess a copy.[15]

Calcaneal Cysts

Should podiatrists take x-rays on all heel pain? The best evidence for doing so is not only the true tumors of the foot that produce heel pain, but also unicameral bone cysts, aneurysmal bone cysts, and osteoid osteomas. Although not particularly dangerous, unicameral and aneurysmal bone cysts can fracture, and present as acute heel pain.[16] **PM**

References

[1] Riddle, D, Schappert,S. Volume of ambulatory care visits and patterns of

Continued on page 94

Heel Pain *(from page 91)*

care for patients diagnosed with plantar fasciitis. Foot and Ankle International. 2004.

[2] Scherer, P, Gordon,D, Kashanian,A, Belvill, A. Misdiagnosed recalcitrant heel pain associated with HLA-B27 antigen. JAPMA, 85-10, 1995.

[3] Prakash,S, Bansal,R, et al. Immunological studies in seronegative spondyloarthropathies. British Journal Rheumatology, 1983, 22(3).

[4] Calmels,C, Eulry,F, et al. Involvement of the foot in reactive arthritis. A retrospective study of 105 cases. Review of Rheumatology—French Ed. 1993 May 60(5):324-9.

[5] Veys,EM, Mielants,H. Enteropathic arthritis. Current Opinion Rheumatology. 1993,5(4):454-60.

[6] Bezza,A, Niamane,R, et al. Involvement of the foot in patients with psoriatic arthritis. Joint Bone Spine, 2004;71(6):546-9.

[7] Moorthy,LN, Peterson,MGE. Burden of childhood-onset arthritis. Pediatric Rheumatology online, 2010,8(8:20).

[8] Thomas, WH. Rheumatoid arthritis of the ankle and foot. In: R.R. Cooper (Ed.)AAOS Instructional course lectures. Vol.28. CV Mosby, St. Louis; 1979:325-336.

[9] Shiff, NJ, Lix,LM,, et al. Chronic inflammatory arthritis prevalence estimates for children and adolescents in three Canadian provinces. Rheumatol Int. 2015 Feb;35(2):345-350.

[10] Mendoza-Pinto,C. Risk factors of vertebral fractures in women with systemic lupus erythematosus. Clinical Rheumatology, 2009 May:28(5):579-85.

[11] Labib,SA, Gould,JS, et al. Heel pain triad (HPT): the combination of plantar fasciitis posterior tibial tendon dysfunction, and tarsal tunnel syndrome. Foot and Ankle International 2002, 23(3):212-20.

[12] Oztuna V, Ozge A, et al. Nerve entrapment in painful heel syndrome. Foot and Ankle International 2002, 23(3):208-11.

[13] Diard F., Hauger O, et al. Pseudo-cysts, lipomas, Infarcts and simple cysts of the calcaneus. Belgium Journal of Radiology, 2007 90(5):315-24

[14] Kilgore WB, Parrish WM. Calcaneal tumors and tumor-like conditions. Foot Ankle Clin, 2005,10(3):541-65.

[15] Madhuri V, Oommen AT, et al. Benign tumors and tumor-like lesions of the calcaneus: a study of 12 cases. Indian Journal of Cancer, 2009, 46(3)

[16] Madhuri V, Oommen AT, et al. Benign tumors and tumor like lesions of the calcaneus: a study of 12 cases. Indian Journal of Cancer, 2009, 46(3).

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