

Heel pain due to psoriatic arthritis in a 50 year old recreational male athlete: case report

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Heel pain is a common presentation in a sports injury practice, with a list of common differentials including achilles tendinopathy and retrocalcaneal bursitis. However, seronegative arthritis can also cause enthesopathies that produce heel pain and should be considered in a differential diagnosis list. In this case, a 50 year old recreationally active male presented with non-traumatic insidious heel pain and without history of any skin conditions or any other symptoms of seronegative spondyloarthritis. Clinical suspicion led to laboratory testing and radiographs / bone scan which yielded the diagnosis of psoriatic arthritis.
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KEY WORDS: psoriatic arthritis, seronegative spondyloarthropathy, athlete, enthesopathy, heel pain, achilles

Introduction

Heel pain is a common presentation in a sports injury practice. Foot and ankle injuries make up approximately 25% of all sports related injuries, while 16% of all sports related injuries involve the foot.¹ The vast majority of these injuries can be attributed to a mechanical diagnosis but it is important to maintain an index of suspicion for systemic inflammatory diseases such as psoriasis.

In the United States, psoriasis affects approximately 2% of the population.² Psoriasis is a chronic autoimmune skin disease and 10% to 40% of individuals with psoriasis

La douleur au talon est courante dans la pratique du sport, et comporte des variantes telles que la tendinopathie achilléenne et la bursite rétrocalcaneenne. Cependant, l'arthrite séronégative peut également causer des enthésopathies produisant une douleur au talon, et doit apparaître sur la liste des diagnostics différentiels. Dans ce cas, un homme de 50 ans actif de façon récréative ressentait une douleur insidieuse non traumatique au talon, et ses antécédents ne démontraient aucune maladie de la peau ou autres symptômes de spondylarthrite séronégative. Les soupçons cliniques ont mené à des tests en laboratoire et des radiographies / une scintigraphie osseuse qui ont permis de diagnostiquer le rhumatisme psoriasique.
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MOTS CLÉS : rhumatisme psoriasique, spondylarthrite séronégative, athlète, enthésopathie, douleur au talon, Achille

develop chronic inflammatory arthritis.³ The overall age and sex adjusted population incidence of psoriatic arthritis in the United States was calculated at 6.59/100,000.⁴ Psoriatic arthritis is a seronegative spondyloarthropathy which is a group of inflammatory arthritides characterized by enthesitis, arthritis of the peripheral joints and/or the axial skeleton, while being negative for rheumatoid factor.⁵ Psoriatic arthritis usually develops at or after the diagnosis of psoriasis, but in 15% to 20% of cases, the arthritis precedes the onset of skin lesions by as much as 2 years.⁵ Heel pain is a common sign of psoriatic arthritis

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with ten percent of psoriatic arthritis sufferers reporting heel pain as a significant symptom.⁶ However, in an athletic setting, the clinician may intuitively lean towards a mechanical diagnosis first in an active 50-year-old male with no previous diagnosis of psoriasis.

Case Report

A 50-year-old male presented to a sports chiropractic clinic with insidious bilateral foot and heel pain that began after a one-week ski trip eight months prior. He self-described his injury to be achilles tendonitis and sought soft tissue care. He reported that his heels did not bother him during the trip, despite walking in ski boots. The pain was focused at the posterior calcaneus and distal attachment of the achilles tendon, with some radiation into the medial arch of the foot and first digit. At rest, the pain was rated a 1 or 2 out of 10 on the numeric pain scale, but with palpation it intensified to 5 or 6 out of 10 (with zero being no pain at all and 10 being the worse imaginable pain). Both feet were affected, but the right foot was generally reported to feel worse. The patient reported that NSAIDs, avoiding aggravating physical activity or footwear have helped with the pain. There was no history of trauma to the feet. The patient had to discontinue playing hockey, due to the pronounced bump on the posterior aspects of both of his heels which contributed to a progressive intense discomfort while skating. The heel pain was also aggravated by golf, which was attributed to his golf shoes and walking the course inclines. He reported no problems during his usual weight training, wind surfing or cycling. He scored a 70 on the 20 question Lower Extremity Functional Score (LEFS). The LEFS max score is 80 and this outcome measure is utilized to monitor function, progress and effectiveness of an intervention.⁷ The patient denied a personal or family history of arthritides, low back pain, eye problems or gastrointestinal complaints. He was a non-smoker, an occasional (social) drinker and sporadically took a multi-vitamin. There were no recent changes in his diet and the patient did not report indulging in rich cheeses and wine on further questioning. He did not take any medication and had never been diagnosed with a skin disease nor sought the opinion from a medical professional for any dermatological reason. Observation revealed a significant enlargement over the posterior calcaneus of the right foot (see figure 1), which was very tender to diagnostic palpation, an 8/10 at presentation. His



Figure 1 *Patient's heel*

right first hallux appeared red and the medial foot was warm to the touch. The skin over the heels and the soles of the feet were scaly and the nail of the right first hallux was thickened. The right foot appeared generally swollen and the circumference of the right midfoot was 1.5 cm larger when compared to the left. During the physical exam, active, passive and resisted ranges of motion of the ankle and foot were full and pain free. The only physical test that aggravated the heel pain was a one legged squat in which the patient described an increase in pressure in the achilles and ankle joint. The patient's leg was noted as unsteady and he demonstrated an obvious joint coupling dysfunction with a valgus knee, internal rotation of the



Figure 2 Radiograph of the patient's heel

tibia and over pronation of the foot during the one legged squat.

The patient had radiographs and a diagnostic ultrasound of the right foot 5 months previous that were arranged by his family medical doctor (see figure 2). The radiographs revealed a calcaneal plantar spur and a calcaneal Achilles spur and the patient was told he had arthritis. The ultrasound showed calcific deposits at the insertion of the Achilles tendon. In light of the history, physical and imaging results, a working diagnosis of an acute retrocalcaneal bursitis was given to explain the irritated heel, however, the patient was referred to a sport medicine specialist to assist in the possible differential diagnosis of Reiter's syndrome or Psoriatic arthritis. Additional testing included a bone scan and blood tests. The bone scan revealed features that are consistent with an enthesopathy of the Achilles' tendons, as can be typically seen with seronegative arthropathies. Other non-specific asymmetric arthritic features compatible with an underlying seronegative arthropathy were also seen by the radiology specialist, most prominently involving the right 1st metatarsophalangeal joint and, to a lesser degree, the right ankle and adjacent tarsus, patellofemoral joints and right hip.

Blood work in this case revealed that ESR, rheumatoid factor and C-reactive protein were all within normal limits. The patient was also negative for HLA-B27 and antinuclear antibody. There was no evidence of a past or

present syphilis infection. Due to the presence of skin lesions on the heel and sole of the foot, as well as thickened toe nails, a diagnosis of psoriatic arthritis was made and the patient was referred to a rheumatologist for treatment which resulted in a trial of methotrexate and nonsteroidal anti-inflammatory drugs (Diclofenac). At a one year follow up / check up, prior to resuming his recreational hockey the patient reported to be consistent with a stretching routine and post exercise icing which were allowing him to be active without pain, including skating. His LEFS improved by 10 points to a score of 80 (a change of 9 is the minimal significant change).⁷ He reported to rarely notice any pain, if at all. However, he did report to purchasing larger shoes and skates that allowed for an accommodation of his calcaneal bump.

Discussion

The differential diagnoses for heel pain in a healthy active 50-year-old male typically include achilles tendinopathy and retro calcaneal bursitis. Retrocalcaneal bursitis is an inflammation of the retrocalcaneal bursa and can also cause pain at the posterior heel.⁸ Achilles tendonopathy is a degeneration and failed healing of the tendon that can cause pain at the insertion on the calcaneus, as well as within the mid substance of the tendon. While these diagnoses are typical, practitioners might consider the other systemic differential diagnoses that are possible. To help in the diagnosis of a systemic inflammatory problem, the practitioner may also identify constitutional symptoms, morning stiffness, elevated acute-phase reactants and worsening of symptoms despite activity modification.⁹ Additionally, if the mechanism of injury is absent or not proportional to the injury, this may also suggest an underlying disease.⁹ In this case, even though the chief complaint was reproduced with palpation of the enthesis of the Achilles tendon and aggravated by a squat, the presence of skin and nail lesions and a mild dactylitis of the hallux led the clinicians to suspect a seronegative spondyloarthropathy.

Individuals with psoriatic arthritis test negative for rheumatoid factor but they may have an association with HLA-B27, especially those with involvement of the axial skeleton.^{10,11} This perhaps atypical case had a negative test for HLA-B27 and lacked any axial complaints yet the bone scan demonstrated multiple asymmetrical joint involvements.

There are many different diagnostic criteria available for psoriatic arthritis. The CASPAR criteria have specificity of 98.7% and sensitivity of 91.4%.¹² To meet the CASPAR (Classification for Psoriatic Arthritis) criteria, a patient must have inflammatory articular disease (joint, spine or enthesal) with ≥ 3 points from the following 5 categories:

1. Evidence of current psoriasis, a personal history of psoriasis or a family history of psoriasis.
2. Typical psoriatic nail dystrophy including onycholysis, pitting and hyperkeratosis observed on physical examination
3. A negative test result for the presence of rheumatoid factor
4. Either current dactylitis, defined as swelling of an entire digit or a history of dactylitis recorded by a rheumatologist
5. Radiographic evidence of juxtaarticular new bone formation, appearing as ill-defined ossification near joint margins (but excluding osteophyte formation) on plain radiographs of the hand or foot.

Current psoriasis is assigned a score of 2, and all other features are assigned a score of 1.

Uncomplicated psoriasis arises in the second or third decade, with the arthritis typically settling in two decades later.³ In 15 to 20% of cases, the arthritis precedes the onset of skin lesions by as much as 2 years.⁵ Since this patient had never been diagnosed with psoriasis, it is difficult to know if the skin condition appeared before the arthritis. The patient's age in this case coincides with the range for this disease, as the mean age of psoriatic arthritis onset ranges from 30 to 55 years.⁵ Psoriatic arthritis affects men and women equally.¹³ All forms of psoriasis are associated with arthritis, but classic psoriasis vulgaris is seen most frequently. Typical psoriatic lesions are erythematous plaques that produce scaling with scratching. Many patients with psoriatic arthritis have mild to moderate skin disease, but there has been no consistent correlation in the literature between the degree of psoriasis and the extent of joint involvement. The psoriasis may be subtle and careful examination of the entire skin surface may be required to visualize the skin lesions. The scalp, ears, periumbilical and perianal region should be examined carefully.⁵

The etiology of psoriatic arthritis is unknown. Genetic, immunologic and environmental factors all play a role in psoriatic arthritis.³ Individuals with a first degree relative with psoriatic arthritis are 50-fold more likely to develop the disease.¹³ A father with psoriasis is twice as likely to pass on the disease than a mother with psoriasis.¹³ Of note to the sports injury practitioner, psoriatic lesions have been known to arise at areas of trauma, which is also known as the Koebner phenomenon.¹³ It has also been suggested that environmental factors play a role and that they are additive to the genetic background.³ Immunology is also implicated which is shown in the aggressive nature of psoriatic arthritis in HIV patients.³

Most patients present with psoriatic arthritis that is considered oligoarthritis or monoarthritis.⁵ A typical patient will present with stiff, swollen and tender DIP joints, in an asymmetric fashion. The joints most often affected are the DIP joints, other small joints of the hands and feet, the sacroiliac joint and the spine. Knees, hips and shoulders are occasionally involved.^{10,14,14} In some patients dactylitis and enthesitis may be the only clinically apparent manifestations of psoriatic arthritis for months or years.¹⁶ The MCP joints and wrists are usually spared, which helps to differentiate this condition from rheumatoid arthritis.⁵ Without treatment, the destruction of joints will continue, which will be seen clinically with joint deformities and radiographically with the development of juxta-articular erosions, joint space narrowing and in some cases, bony ankylosis.⁵

The enthesis is the attachment site of tendons, ligament and joint capsule into bone. Their function is to reduce stress concentrations during the transmission of force.¹⁷ Enthesitis is inflammation at the site of the insertion of tendons, ligaments or capsules and is a feature of up to 40% of patients with psoriatic arthritis. However, it is also found in other spondyloarthropathies. This enthesitis can occur anywhere in the body, but it most commonly occurs at the achilles tendon, the calcaneal insertion of the plantar fascia and at the insertion of the hamstrings on the ischial tuberosity.¹⁸ Physical examination will reveal soft tissue swelling, usually accompanied by tenderness to palpation and sometimes erythema and warmth over the area. Enteseal inflammation may lead to destruction of the adjacent bone and joints.⁵ Enteses are prone to experience high mechanical stresses that make them vulnerable to microdamage. It has been suggested that

biomechanical stress and microdamage at the enthesis may be the trigger that causes enthesitis,¹⁴ much like the Koebner phenomenon in skin lesions. Theoretically, this is important to note as athletes with psoriasis would be at a higher risk of being affected by enthesitis and possibly psoriatic arthritis.

A review of the literature revealed a similar case report of a 39-year-old kicker in the National Football League who developed mild pain in the medial right knee during the preseason.¹⁰ His injury was thought to be mechanical and he was able to finish the season with the help of NSAIDs. A large knee effusion developed while he was resting during the off-season. A corticosteroid injection and a knee arthroscopy, only provided temporary relief from the swelling. It was then noted that the player had several small patches of psoriasis on his elbows. The diagnosis of psoriatic arthritis was made and he was treated with pharmacotherapy.¹⁰ The case is similar to this presentation, as it is an example of a common sports injury presentation that leads to a diagnosis of psoriatic arthritis and points to how easily the correct diagnosis may be missed.

Dactylitis is the swelling of a single digit of the hand or the foot and it is also known as a "sausage digit". It is found in spondyloarthropathies and is common in psoriatic arthritis. It is found in 1/3 to 1/2 of patients at some point during the disease. It is more commonly found in the toes than in the fingers.⁵ It is caused by a combination of tenosynovitis and enthesitis of the tendons and ligaments as well as synovitis involving the entire digit.¹⁸ On rare occasion, the patient may present without joint involvement, but with considerable enthesitis, as evidenced by multiple sites of aching and stiffness, which may be confused with fibromyalgia or overuse tendonitis.¹⁸

Nail involvement may be the only indication of psoriasis. Psoriatic nail changes include ridging, pitting, onycholysis and hyperkeratosis. Nail changes are most likely associated with psoriatic arthritis involvement of the DIP joint of that digit.⁵

Other spondyloarthropathies exhibit extra-articular manifestations, such as ocular inflammation (conjunctivitis, iritis, scleritis and episcleritis), oral ulcerations and urethritis. These also occur with psoriatic arthritis, but less frequently.³

There are no diagnostic laboratory findings for psoriatic arthritis, however, considering the systemic inflam-

matory nature of this disease C-reactive protein and the erythrocyte sedimentation rate may be elevated, but to a lesser degree than other inflammatory arthritides.⁵ Elevation of these reactants may correlate with disease activity, more commonly in patients with multiple joints affected by psoriatic arthritis.³ Psoriatic arthritis patients are generally rheumatoid factor negative, yet 10% may test positive. A positive rheumatoid factor test does not exclude psoriatic arthritis,⁵ but psoriasis is an exclusion factor for seronegative rheumatoid arthritis.³

Radiographic signs include joints space narrowing and marginal bone erosions. The entheses are subject to similar erosions and bone proliferation, especially in the calcaneus, hand and foot.¹⁵ Periarticular osteopenia is usually absent in psoriatic arthritis, which in fact is another feature that helps distinguish psoriatic arthritis from rheumatoid arthritis.⁵ Non-marginal syndesmophytes can be found in the spine, along with paravertebral ossification. Together, these two types of ossification can fuse to adjacent vertebral bodies causing bony ankylosis.¹⁵

When comparing individuals with psoriasis to healthy control groups, individuals with psoriatic arthritis have a reduced quality of life and functional capacity.¹⁸ Early diagnosis of psoriatic arthritis may lead to better management and therefore increased quality of life and ability to engage in physical activity.

Medical treatment for psoriatic arthritis includes several different types of medications. NSAIDs have commonly been used to control mild symptoms of synovitis.¹⁹ Intra-articular injections of glucocorticoids have also been used. However, systemic glucocorticoids need to be used with caution as they are associated with the occasional risk of post steroid psoriasis flare.²⁰ Methotrexate is one of the most commonly used systemic medications for psoriatic arthritis.²⁰⁻²³ Tumor Necrosis Factor (TNF) blockers, such as Infliximab and Etanercept, have shown to be an important mediator of inflammation in the skin and synovitis of psoriatic arthritis patients.^{24,25} Sulphasalazine has also shown some benefit for patients with peripheral joint activity, but does not seem to have a significant effect on axial disease.^{19, 26-28}

Considering arthritis can appear before the psoriatic skin lesions, diagnosing psoriatic arthritis can be challenging. The varying presentation patterns and possibility of overlap with other rheumatic syndromes also add to the difficulty of diagnosis. A thorough physical examina-

tion with a careful assessment of nails and skin may help the clinician. Future research may investigate if psoriatic arthritis is more prevalent in athletes with psoriasis when compared to sedentary individuals with psoriasis.

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