Ankylosing spondylitis is a disease in which inflammation of joints, most often in the axial skeleton, can lead to reactive fibrosis and eventual joint fusion with associated immobility and kyphosis. The disease often involves extra-articular features, such as uveitis and aortic regurgitation, as well as associated inflammatory conditions of the intestines. Its etiology is unknown. Ankylosing spondylitis most commonly presents in young males (15-30 years old) as persistent low back pain and stiffness that is worse in the morning and at night and improves with activity. The authors report the case of a young male athlete whose symptoms were initially incorrectly diagnosed as sacroiliac joint instability and dysfunction and later as a sacroiliac stress fracture before further workup revealed a seronegative spondyloarthropathy and the diagnosis of ankylosing spondylitis. The patient was prescribed oral indomethacin daily by the attending rheumatologist and started on a slow progression of return to running, jumping, and weight lifting. Within 4 weeks of beginning this treatment, the patient had complete cessation of pain with the medication. At follow-up 1 year after graduation from his university, the patient was nearly symptom free and working in a non-heavy labor job. The purpose of this case report is to remind sports medicine physicians of the prevalence of rheumatologic diseases in general and ankylosing spondylitis in particular and of the various ways in which spondyloarthopathies may present in athletes. Increased suspicion may lead to earlier diagnosis and treatment, potentially reducing illness severity and duration and improving the performance of athletes with this condition.
Ankylosing spondylitis is a disease in which inflammation of joints, most often in the axial skeleton, can lead to reactive fibrosis and eventual joint fusion with associated immobility and kyphosis. Other musculoskeletal complications include spinal fractures, cauda equina syndrome, dactylitis, and peripheral asymmetric oligoarticular arthritis. The disease often involves extra-articular features, such as uveitis and aortic regurgitation, as well as associated inflammatory conditions of the intestines. The etiology is unknown but postulated to be of autoimmune origin, having a strong association with the B27 histocompatibility complex (HLA-B27).

Ankylosing spondylitis most commonly presents in young males (15-30 years old) as persistent low back pain and stiffness that is worse in the morning and at night and improves with activity. This report describes a young male athlete whose symptoms were initially incorrectly diagnosed as sacroiliac joint instability and dysfunction and later as a sacroiliac stress fracture before further workup revealed a seronegative spondyloarthropathy and the diagnosis of ankylosing spondylitis.

CASE REPORT

A 21-year-old male track and field long-jump athlete presented with the chief complaint of right hamstring tightness and sacroiliac pain of 1-week duration. The sharp pain was rated as 2 to 3 out of 10 (numeric pain scale: 0=no pain, 5=moderate pain, 10=worst pain imaginable) and occurred while running and jumping, but not while walking. There was no known mechanism of injury. The patient reported no weakness or numbness.

The patient had no history of previous spinal, pelvic, or hip trauma, although he had previously been diagnosed with ulcerative colitis. Surgical history included emergency subtotal colectomy at age 18 for intractable bleeding (subsequently diagnosed as ulcerative colitis), followed by mucosal proctectomy with ileal J-pouch anal anastomosis and loop ileostomy, an exploratory laparotomy and lysis of adhesions for small bowel obstruction, and later an ileostomy reversal.

On presentation, physical examination revealed tenderness to palpation along the right sacroiliac joint line. Hamstring and gluteal strength, as well as range of motion of the hip and back, were normal. The hamstring muscles were noted to have high tension bilaterally, which was normal for this athlete. The sacroiliac rotation stress test, long-sit test, and sacroiliac compression, distraction, and squish tests yielded negative results. The flexion, abduction, and external rotation test yielded positive results for pain.

A tentative diagnosis of sacroiliac joint instability and dysfunction was given. Therapy consisting of rest, scheduled anti-inflammatory medications, electrical muscle stimulation, osteopathic manipulative treatment, and physical therapy yielded no immediate improvement in symptoms. During 3 to 5 weeks, using regular physical therapy, prepractice heating and stretching, and postpractice icing and electrical muscle stimulation, the patient’s symptoms improved and he returned to full training and competition. However, on cessation of physical therapy, his symptoms returned. He continued to practice his exercises during the 6 months following initial presentation, through the end of his junior-year track season.

Ten months after initial presentation, and after a period without physical therapy, the patient presented with recurrence of sacroiliac joint pain of greatly increased severity. His training and competition were limited due to pain. Regular physical therapy was restarted. During the following week, the severity of his symptoms escalated to the point that he was completely unable to practice and the use of crutches to assist with walking, due to debilitating pain, was discussed. Anti-inflammatory medications were started, and a series of radiographs of the lumbar spine and sacrum were interpreted as revealing normal findings (Figure 1). Magnetic resonance images (MRI) revealed a right superior labral tear, right cam morphology of the femoral head, and right sacroiliitis (Figures 2-3). However, the patient was initially diagnosed as having a sacral stress fracture.

A second opinion regarding the MRI prompted follow-up blood work to rule out a seronegative spondyloarthropathy, given the increased T2 signal medial and lateral to the sacroiliac joint. Anti-inflammatory medications were continued. The patient was instructed to continue exercising via nonimpact modalities such as pool running and elliptical training, without running or jumping, until the problem could be further elucidated. The patient had an erythrocyte sedimentation rate of 14 mm/hr, a C-reactive protein level of 1.36 mg/L, a serum calcium level of 9.7 mg/dL, and a serum 25-hydroxy vitamin D level of 49.6 ng/mL. The antinuclear antibody screen yielded negative results, and the histocompatibility antigen (HLA-
B27) test had a positive result. Given the HLA-B27 results, the patient was referred to Rheumatology for further workup and treatment of suspected ankylosing spondylitis with sacroiliitis.

The patient was prescribed oral indomethacin daily by the attending rheumatologist and started on a slow progression of return to running, jumping, and weight lifting. Within 4 weeks of beginning this treatment, he experienced complete cessation of pain with the medication. He was able to compete and finish his senior-year indoor and outdoor track and field seasons without residual symptoms. He was further able to compete and score in the Big Ten Conference long-jump championships. Following completion of the outdoor track and field season, the patient graduated from the university and elected not to continue his athletic career. He also requested that indomethacin be discontinued.

At follow-up 1 year after graduation, the patient was nearly symptom free and working in a non-heavy labor job. He was taking no medications, including no anti-inflammatory medications, for the conditions. He reported that he was able to run 10 to 20 miles per week as well as lift weights 3 to 4 times per week without symptoms. He reported only occasional right sacroiliac joint pain when playing pick-up basketball. These symptoms required no medication for pain control and resolved within hours of participation.

**DISCUSSION**

Ankylosing spondylitis is a rheumatologic condition in which immune-mediated inflammation induces fibrosis, bone remodeling, and new bone deposition. The disorder is not rare, with a recent study estimating a prevalence as high as 0.9% in the US population.

Joints are most commonly affected in ankylosing spondylitis, although extraarticular symptoms exist as well. The axial skeleton is more often involved than the appendicular, where large, proximal, unilateral arthritis predominates. The sacroiliac joint is involved nearly 100% of the time, followed by the intervertebral joints (75%); unilateral involvement of the shoulders (30%) and knees (20%) and other joints, such as temporomandibular, also occurs. Extra-articular symptoms of ankylosing spondylitis commonly include uveitis, enthesitis, and fatigue. Long-term complications include spinal stenosis and fracture as well as restrictive pulmonary and cardiac sequelae resulting from pronounced kyphosis and spinal fusion. Classically, patients initially present with a history of dull, diffuse low back and buttock pain and stiffness, often unilateral or alternating, which are worse in the morning but improve with activity. The presentation and course of the condition may vary greatly between patients, and shoulder symptoms as the presenting feature may increase confusion and delay diagnosis.

Clinically significant as well as more severe disease occurs more commonly in males. Age of onset is often in the second or third decade, with a mean of 25.6 years. Associations have also been reported in patients with ankylosing spondylitis and inflammatory bowel disease. Palm et al reported an overall prevalence of 2.6% of patients with ulcerative colitis having associated ankylosing spondylitis. Brophy et al, describing a series of 3287 patients with ankylosing spondylitis, reported an increased rate of inflammatory disease including iritis, psoriasis, and inflammatory bowel disease. They concluded that psoriasis and inflammatory bowel disease are associated with increased severity of the condition and decreased function in patients with ankylosing spondylitis.

The differential diagnosis for the sacroiliitis and low back pain that often herald this condition includes stress fracture, muscle strain or spasm, lumbar disk herniation, osteoarthritis, gout, neoplasia, infection, Whipple’s disease, inflammatory bowel disease, and rheumatologic diseases such as ankylosing spondylitis, psoriatic arthritis, reactive arthritis, and rheumatoid arthritis. Magnetic resonance imaging is preferred for early detection of ankylosing
spondylitis, especially when conventional radiographs are equivocal. Conventional radiographs show structural damage in more advanced disease and can help monitor progress; MRI should be used instead to screen for ankylosing spondylitis.

Treatment for ankylosing spondylitis has long been centered around nonsteroidal anti-inflammatory drugs and disease-modifying antirheumatic drugs. Newer agents such as tumor necrosis factor-alpha antagonists have been shown to have greater effect ameliorating symptoms; however, their impact in slowing or reversing the long-term sequelae of ankylosing spondylitis is unknown.

A review of rheumatologic diseases presenting as sports-related injuries explored the temptation of sports medicine physicians to diagnose every joint complaint as mechanically induced injury. It also highlighted the importance of having a high index of suspicion for rheumatologic diseases such as spondyloarthropathies, rheumatoid arthritis, gout, pseudogout, and systemic lupus erythematosus in athletes presenting with joint symptoms.

The current patient had a fairly classic presentation, with right hamstring tightness and unilateral low back pain centered on the sacroiliac joint. Although he was a long jumper, he had experienced no known mechanical injuries. He had a history of ulcerative colitis requiring partial bowel resection. Other than tenderness to palpation along the joint line of the right sacroiliac joint, results of the physical examination were normal. After 10 months of remitting and relapsing symptoms treated with intermittent physical therapy and use of nonsteroidal anti-inflammatory drugs, the patient experienced a progressive escalation of symptoms and deterioration in functional capability and athletic performance.

The patient’s history of ulcerative colitis, sacroiliac joint tenderness and pain, age, and sex placed him at moderate risk for having a spondyloarthropathy. A possible factor contributing to the delay in reaching the conclusive diagnosis in this case, and probably in other cases, is the individual sports medicine provider’s version of selection bias. Physicians who see only a specific subset of patients who are more likely to have joint complaints due to injury may unreasonably narrow the differential diagnosis. This may result in the inadvertent omission of rheumatologic conditions from consideration. Physicians must keep in mind that the population at risk for diseases that mimic sports injuries is the very cohort being seen most often: young, otherwise healthy males and, to a lesser extent, females. Other historical features that may increase or decrease the index of suspicion for rheumatologic disease and that should be screened for in every athletic patient presenting with joint complaints are morning stiffness lasting more than 1 hour that improves with exercise but does not resolve with rest and personal and family history of rheumatologic diseases or inflammatory conditions.

**CONCLUSION**

Similar delays in reaching diagnoses have occurred in other case reports of athletes with rheumatic diseases. The purpose of the current case report is to increase awareness among sports medicine physicians, athletic trainers, and other medical staff of the prevalence of rheumatologic diseases in general and ankylosing spondylitis in particular and of the various ways in which spondyloarthropathies may present among athletes. The authors hope that this increased awareness will lead to earlier diagnosis and treatment, potentially reducing illness severity and duration and improving the performance of athletes with this condition.

**REFERENCES**