LOW BACK PAIN (LBP) is a common complaint in the adolescent and athletic populations, with 50% of 18 to 20-year-olds reporting at least one episode. Back pain can have many causes, including congenital defects, infection, trauma, idiopathic pain, sickle cell pain crisis, and overloaded backpacks. Depression and anxiety have been documented in children complaining of non-specific low back pain. Certain factors serve as a “red flag” for the possible existence of a serious musculoskeletal injury. Such red flag factors include fever, weight loss, severe or constant pain, nocturnal pain, pain that has progressed over time, a history of acute or repetitive microtrauma (which can lead to overuse injuries), pain that interferes with activity, and a history of strenuous athletic participation. The presentation of any of these factors warrants thorough clinical investigation.

Athletic trainers serve an important role in initiating physician referral when any of these red flags are present. Although the severity of an injury is not always clearly evident at the time of initial assessment, a detailed history and careful examination are essential for initial injury evaluation. This case report describes the clinical presentation and plan of care for an adolescent wrestler and motocross racer who had multiple spine abnormalities.

Case Review

A 14-year-old male who participated in competitive wrestling, motocross racing, and weightlifting was evaluated by his high school athletic trainer for LBP. The use of moist heat, electrical stimulation, and massage treatments helped to alleviate his LBP for a period of several months. Eventually, he was referred to our clinic for evaluation by a primary care sports medicine physician. The athlete complained of intermittent LBP for the previous 5-6 months, but he did not recall any specific injury episode. His mother reported that he had grown 6 inches and gained 40 pounds during the past year. Episodes of pain typically started in the morning (5-6/10 intensity), with its intensity decreasing over the course of the day. He reported that pain was most noticeable while performing squats and during wrestling and that he occasionally experienced muscle tightness during the night. He denied having experienced any radicular pain, numbness, tingling, or lower extremity muscle weakness.
Diagnosis

The physical examination identified a lack of hamstring flexibility (right greater than left) and right anterior innominate rotation. He also presented deficient core and gluteal strength. Because tenderness was elicited by palpation over the L4/L5 spinous processes, a lumbar spine series of x-rays, including oblique views, were ordered to rule out a spinous process fracture or an unstable transitional vertebra. The x-rays revealed bilateral pars interarticularis defects at L4/L5, with grade 1 spondylolisthesis and a step-off at the spinous process of the lumbosacral junction (Figure 1). The lateral view demonstrated a 1.8 mm anterior displacement of L5 (Figure 2). The lateral and AP views revealed a transitional 6th lumbar vertebra (lumbarization of S1) and spina bifida occulta at L6 (Figure 3). The results of an MRI demonstrated L4/L5 spondylolisthesis, a left foraminal disc herniation, and left nerve root impingement. No bone edema was present to suggest the existence of an acute injury. We hypothesized that repetitive microtrauma associated with motocross jump landings, in addition to stresses imposed by his participation in wrestling and weight training, contributed to the development of spondylolisthesis. Due to his young age, the patient was referred to a local children’s hospital that specializes in pediatric spine care. The pediatric orthopedic surgeon recommended bracing, restriction of activity, and repeat x-rays in 6 months to evaluate any further displacement.

Treatment

This athlete’s treatment included restriction of all athletic participation and motocross riding, combined with a supervised rehabilitation program to improve core stabilization and gluteal strength. He was provided with a custom-fitted brace to limit lumbar extension. He returned to our clinic to be treated with three sessions of prolotherapy. At each session, 20cc of a 15% dextrose solution was injected into the supraspinous, interspinous, iliolumbar, sacrotuberous, and sacrospinous ligaments, the upper and lower poles of the SI ligament complex, the multifidi of the sacrum, and...