A Young Female Athlete With Acute Low Back Pain Caused by Stage IV Breast Cancer

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Abstract

Objective: The purpose of this case report is to describe the case of a young female athlete with low back pain caused by metastatic breast cancer.

Clinical Features: A 27-year-old woman presented with low back pain after striking a ball during kickball 3 days earlier. Because of the mechanism of injury and onset, the patient was originally diagnosed with a lumbar spine sprain/strain.

Intervention/Outcome: After radiographs were obtained and were read as unremarkable, a 2-week trial of care was initiated that included soft-tissue mobilizations, anti-inflammatory medications from her primary care physician, and therapeutic rehabilitation exercises. After this trial concluded, the patient did not improve and continued to be in significant pain. Magnetic resonance imaging was then ordered and revealed an expansile lesion at L2 with cortical compromise. Referral to an oncologist prompted the diagnosis of stage IV breast cancer.

Conclusion: Poor response to conservative treatment may indicate the working diagnosis is incorrect and that it must be reconsidered. In this case, a lack of response to care with persistent high severity of pain despite a multimodal approach justified further investigation with advanced imaging, which revealed spinal metastases secondary to breast cancer. Clinicians should be aware of history and physical exam indicators of red flag conditions that may present as low back pain. (J Chiropr Med 2017;xx:1-6)

Key Indexing Terms: *Breast Neoplasms; Female; Athletes; Fractures, Bone; Fractures, Spontaneous; Lumbar Vertebrae; Magnetic Resonance Imaging*

Introduction

According to the Surveillance, Epidemiology, and End Results (SEER) Program, a National Institutes of Health program that tracks cancer statistics, an estimated 246 600 new cases of breast cancer will be diagnosed in the United States in 2016.[1] SEER also estimates that the incidence rates for 30-year-old US women being diagnosed with breast cancer range from 0.44% over 10 years to 4.05% over 30 years. Roughly 1.8% of all new cases of breast cancer are diagnosed between the ages of 20 and 34.

Of all new diagnoses, 5.6% of de novo breast cancer diseases are initially found to be stage IV.[2] A Swiss study of 254 breast cancer patients with bone metastases reported that 36 patients (14.2%) with a median age of 62 had developed a pathological fracture. The same study reported that in 40% of cases with pathological fracture, the diagnosis was bone metastasis.[3]

Low back pain is a considerably common condition. A systematic review by Hoy et al estimated the 1-year prevalence rate at 38% of the global population.[4] They also estimated recurrence rates at the 1-year point ranging from 24% to 80%, with the highest rates of incidence tending to occur in the third decade of life and with prevalence increasing with age until 60 to 65 years.[5] There are a myriad of risk factors including, but not limited to, working with heavy loads, manual tasks, lifting, awkward postures, low educational status, stress, anxiety, depression, and obesity.[6]

The purpose of this article is to describe a young healthy female athlete with lower back pain presenting with a pathological fracture at L2 secondary to metastatic breast cancer.

Case Report

A 27-year-old white woman presented to a chiropractic office with the chief complaint of lower back pain after warming up and participating in a kickball match. She reported she felt some discomfort while she was jogging,

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but subsequently had pain after striking the ball with her right foot. She reported pain at the L2/3 level with mild radiation into the right paravertebral region. She described the pain as constant, sharp, and stabbing and rated it as an 8/10 on a numeric pain scale. She denied any radiating pain or paresthesias into the extremities. She had a history of uncomplicated low back pain that was previously relieved with conservative care at the same office. This history dated back to her teenage years and was attributed to a mild lumbar scoliosis.

The patient's physical exam revealed a decrease in flexion and extension active range of motion with pain in the upper lumbar area. Kemp's and Yeoman's tests were positive for localized pain. She demonstrated +4 tenderness to palpation at the L2 level. Patellar and Achilles deep tendon reflexes were 2/4 bilaterally. Babinski and lower extremity clonus were absent bilaterally. Lower extremity myotomal testing was 5/5 bilaterally. Increased paraspinal muscle tone was noted at the level of complaint. The patient had a family history of breast cancer. Her aunt and grandmother were diagnosed in their 50s and 60s, respectively. In years past she had routine mammograms to observe a cyst in her right breast. At the time of this incident, she had not been screened within the past year.

The patient was diagnosed with a lumbar spine sprain/strain with other differential diagnoses including discogenic pain and spondylolysis. Radiographs obtained to rule out spondylolysis did not reveal signs of fracture or dislocation; however, in retrospect, subtle lucencies are visible in the vertebral body and left pedicle (Fig 1). Treatment was then rendered and included soft tissue mobilizations to the lumbar spine and hips.

The patient was intolerant to side posture positioning for manipulation, so the procedure was not performed. The patient was placed on a conservative treatment plan for 2 weeks.

The patient also reported seeing her employer's on-site physician, who prescribed her with oral anti-inflammatory drugs and physical therapy. Physical therapy sessions were directed to strengthen core musculature and increase range of motion.

Roughly 2 weeks later, the patient returned to the chiropractic office with no change in signs or symptoms. A magnetic resonance imaging (MRI) scan of her lumbar spine was ordered to rule out stress edema and/or discogenic pathology. The MR image was read by a radiologist and found to have significant findings of a 2.2-cm expansile lesion in the left L2 vertebral body with associated overlying vertebral superior endplate concavity focally (Figs 2 and 3). The extension of the mass into the pedicle and obvious cortical expansion/destruction along the lateral side of the vertebral body created a differential diagnosis of hemangioma with pathologic fracture, giant cell tumor, osteoblastoma, plasmacytoma, or metastatic disease of unknown origin. There was also a subtle T2 hyperintense lesion along the superior endplate of L1 eccentric to the right that represented a second lesion (not pictured here), increasing the chances of a malignant diagnosis.

The patient was subsequently referred to an oncologist, who arrived at a diagnosis of stage IV breast carcinoma. A mammogram and ultrasound-guided biopsy revealed a cancerous tumor in the right breast. Two more metastatic

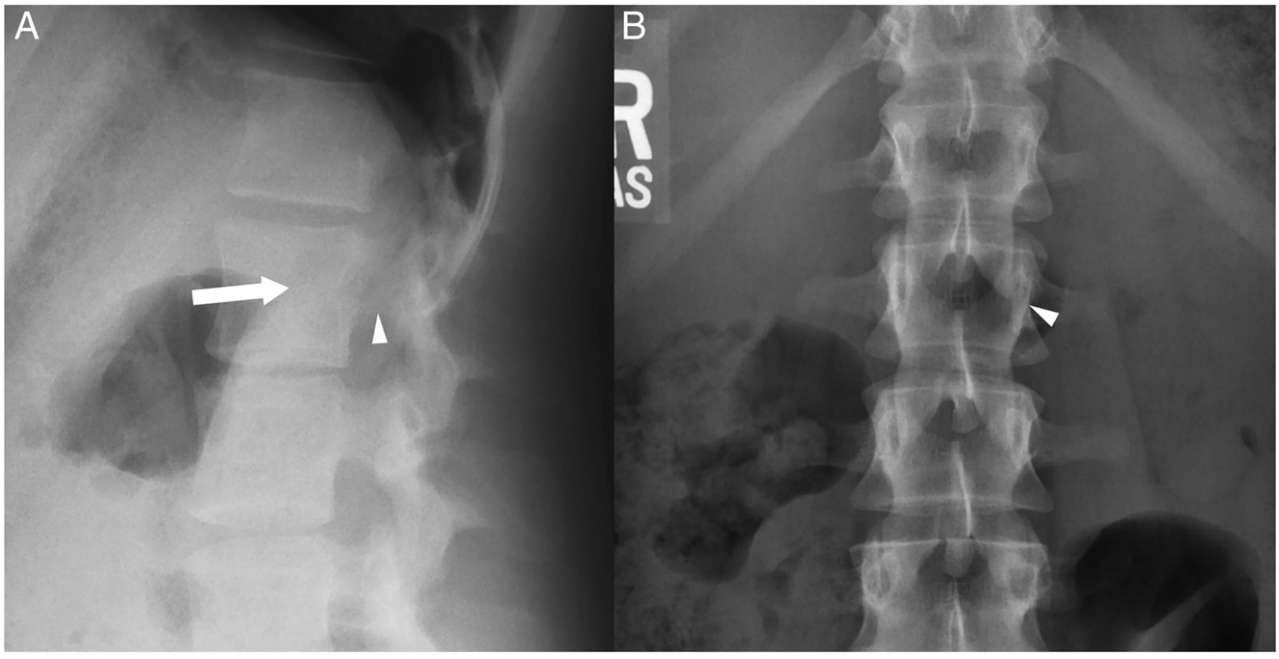

Fig 1. *(A) Lateral and (B) anteroposterior thoracolumbar radiographs demonstrating subtle lucencies within the vertebral body (arrow) and left pedicle (arrowheads) of L2.*