Metastatic Cancer of the Thoracic and Lumbar Spine Presenting as Mid- and Low Back Pain in a Long Distance Runner

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ABSTRACT

Objective: The purpose of this case study is to describe the presentation of a patient with persistent back pain and a history of carcinoma.

Clinical Features: A 50-year-old female runner presented to a chiropractic office with persistent moderate low back and mid-back pain. She had a history of breast carcinoma. She had no positive neurologic signs or symptoms suggestive of radiculopathy. She denied any other health symptoms and received mild relief with only 1 office visit consisting of spinal manipulation, moist heat, and electrical stimulation. Although the patient experienced some pain relief after her chiropractic treatment, she continued to experience persistent mild pain in the thoracolumbar area.

Intervention and Outcome: Because of the patient's lingering back pain, she was referred for lumbar spine radiographs. On evaluation of the radiographs, a missing right L3 pedicle was seen. A subsequent computed tomography scan of the lumbar spine revealed marked metastatic changes to the lower thoracic and upper lumbar spine. The patient was immediately referred to her oncologist. The metastatic changes had progressed to her liver, and she succumbed to the disease 6 months later.

Conclusion: This case highlights the importance of patient health history and further investigation of the red flag of persistent pain in patients with a history of carcinoma. (J Chiropr Med 2018;17:121-127)

Key Indexing Terms: *Breast Neoplasms; Neoplasm Metastasis; Chiropractic; Diagnostic Imaging*

INTRODUCTION

Thoracic and lumbar spinal pain are 2 common complaints that patients present to the clinical chiropractic setting and are seen every day by various practitioners.[1] It is relatively uncommon that low back pain represents a serious disease, but metastatic disease can present as low back pain, especially in patients with a history of carcinoma. It is these unique cases that the clinician must be wary of, in which common mid-back and low back pain represents a more serious pathologic condition, especially when the pain seems reticent to reliable and proven conservative care.

It is estimated that more than 85% of acute low back pain can be categorized as nonspecific, which includes lumbar strain and sprain, degenerative disk or facet process, and spinal stenosis or spondylolisthesis. Less than 5% is pathologic in origin, including neoplasia, infection, inflammatory arthritis, and visceral disease.[2] It is these rare but extraordinary cases that can easily slip by the clinical practitioner until the symptoms are so severe they are impossible to ignore.

Approximately 5% to 6% of women with breast cancer present with distant spread, with bone representing the most common site of metastatic lesions. The risk of developing bone metastasis 10 years after initial diagnosis is 7% to 9%.[3] It is imperative that clinicians be able to detect any clues in the patient's history and physical examination to afford an early recognition of possible spinal metastasis and give the patient the best chance of survival. It is the purpose of this case report to describe the discovery of such a case in a seemingly healthy and active middle-aged athletic patient.

CASE REPORT

A 50-year-old woman presented to a chiropractic office with moderate right lumbar and thoracic pain and mild pain in the right cervical and upper trapezius area. The patient had been seen 2 and 3 months previously for right lower thoracic and lumbar pain and could not recall any recent injury to these areas of her spine. However, she had been running many miles per day training for several half-marathons. She responded well to the previous treatment regime of spinal

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manipulation, moist heat, and electrical stimulation and had been asymptomatic between those visits. On her third visit 2 months later, she again reported right lumbar pain and right upper thoracic pain. The patient denied any extremity symptoms or any constitutional symptoms such as nausea, vomiting, bowel or bladder changes, fever, or weight loss.

She exhibited full range of motion of the cervical, thoracic, and lumbar spine, although movement of these areas did exacerbate her symptoms. She was mildly tender to palpation to the right upper trapezius and right thoracolumbar para spinal muscles and had marked hypertonicity of these involved muscles. She exhibited hypomobility and tenderness to spinal palpation over her thoracic and lumbar spine in a sitting position. She was not given a full neurologic workup because she denied any radicular, radiating, or sensory symptoms. She again was treated with spinal manipulation, moist heat, and electrical stimulation and tolerated the treatment well. The patient was not instructed in any spinal exercises because she was in excellent physical condition and very flexible.

The patient appeared to be in good health because she had run 3 half-marathons in 45 days, although her medical history included a left breast carcinoma 5 years previously and she had undergone a total mastectomy of the involved left breast and a right breast mastectomy for prophylactic purposes. It is unknown whether the patient had undergone genetic testing for the *BRAC* mutation. Her father had died of colon cancer 18 years earlier. The patient had previously received chemotherapy postoperatively and followed up on her routine checkups, including laboratory analysis, religiously.

She presented 2 days after follow-up and had improved spinal range of motion and less pain. At this time the patient, although somewhat improved, reported that she was still experiencing some residual right thoracolumbar spinal pain. She asked about the possibility of obtaining spinal radiographs. Both the clinician and the patient agreed that she should undergo a radiographic examination of her lumbar spine because of her mild but residual pain and medical history. She was referred to the local hospital for routine weight-bearing anteroposterior and lateral radiographs of the lumbar spine.

The lumbar radiographs were viewed that day shortly after they were obtained. The lateral view of the lumbar spine revealed mild spondylosis deformans present at multiple levels, and the AP lumbar view revealed an absent right L3 pedicle (Fig 1). After consulting with the attending radiologist the next day and informing him of the patient's medical history, it was decided that further assessment with a computed tomography scan of the lumbar spine was warranted.

Axial computed tomography imaging of the lumbar spine was performed without contrast. That study revealed multiple punched-out lytic lesions throughout the osseous structures, noted particularly in the right pedicle of T12 and L3 (Figs 2, 3, and 4). There was a minor compression deformity to a portion of the posterior superior element of T12 with an additional nondisplaced, vertically oriented fracture to the most anterior aspect of the right T12 pedicle. There was also a compression deformity to the right lateral L1 inferior endplate. No other paraspinal, intrathecal, or extrathecal masses were identified. The patient was seen in the chiropractic office the same day. After she was informed of the CT scan results, she immediately contacted her oncologist for further workup. The metastatic changes had progressed to her liver, and she succumbed to the disease 6 months later. The patient provided consent to publish this study.

Discussion

Spinal metastasis represents an extension of neoplastic disease, and early detection and accurate diagnosis provide the patient with the best chance of successful treatment and optimize the quality of an afflicted patient's life. The vertebral column is the most common site of skeletal metastasis, with up to 70% of patients with cancer harboring secondary spinal disease.[4] The spinal lesion represents the first manifestation of cancer in 12% to 20% of patients who present with symptoms related to spinal metastasis.[4] Approximately 95% of metastases are extradural lesions, with intradural extramedullary lesions making up the majority of remaining lesions, whereas intramedullary lesions comprise approximately 0.5% of spinal metastases.[4]

Spinal radiographs are often the first investigation used to define the future course of action. Isotope bone scanning has been reported to be the most sensitive screening procedure for the identification of general pathologic bone conditions but has been reported to have low specificity.[5] Computed tomography and magnetic resonance imaging often are used after the general area of metastatic involvement is located and are more often used in cases of neurologic symptoms.[6]

Red flags associated with low back pain include age >50 years; fevers, chills, or recent urinary tract or skin infection; penetrating wound near the spine; significant trauma; unrelenting night pain or pain at rest; progressive motor or sensory deficit; saddle anesthesia, bilateral sciatica or leg weakness, difficulty urinating, or fecal incontinence; unexplained weight loss; history of cancer or strong suspicion for current cancer; history of osteoporosis; immunosuppression; chronic oral steroid use; intravenous drug use; substance abuse; and failure to improve after 6 weeks of conservative therapy.[7]

Spinal metastasis is the most common form of secondary osseous involvement by a variety of cancers, usually presenting clinically in the form of backache.[8] This secondary metastasis occurs 20 times more often than primary neoplasms of the spine.[9] It is estimated that 18 000 new cases with spinal secondary involvement are diagnosed each year in North America in all age groups, with the highest incidence during