Leg Pain May Reveal Vertebral Osteoporosis

To the Editor:

We report a case of neurological complication related to an osteoporotic vertebral fracture. A 79-year-old woman presented with a 2-month history of worsening radicular pain in her left lower limb. She had no history of trauma, and the pain was most severe in her left buttock, extending along the left posterior thigh and anterior leg. She experienced permanent radicular pain and dysesthesia (pins and needles) in the L5 dermatome of the left leg in the standing position, but almost no pain while supine. Her radicular pain had been recently aggravated over a 10-day period before she presented at hospital. When she stood up or walked, the radicular pain became severe, making it impossible to walk continuously for more than 10 to 15 minutes.

Questioned on past events that might be related to the compression vertebral fracture, she remembered having experienced one single episode of acute and intense low back pain during a coughing spell related to a viral bronchitis. This episode had occurred 2 weeks preceding the onset of the radicular pain.

Neurologic examination revealed moderate hypoesthesia in the L5 dermatome. Deep tendon reflexes were normal. Examination also revealed mild bilateral low back pain. Her height was 160 cm and weight 57 kg; she took no regular medications and was otherwise fit and well. An osteoporotic compression fracture of the L5 vertebral body was visible on lateral view radiograph. Magnetic resonance imaging (MRI) revealed the edema associated with the fracture as a high signal intensity on fluid-sensitive sequences. The compression fracture of the L5 vertebral body appeared with a linear low signal intensity on all sequences. Computed tomography (CT) scan showed a complete L5 osteoporotic vertebral body collapse (Figure 1). It also revealed typical features of a preexisting lumbar stenosis with ligamentum flavum hypertrophy and bilateral facet-joint arthritis and hypertrophy at the L3, L4, and L5 levels. Bilateral foraminal narrowing was identified at the L5 level. The T-score was –3.5 by lumbar bone densitometry. She had no previous history of osteoporotic fracture. Osteoporosis had been diagnosed a few years before and treated with bisphosphonates (risedronate for a few months and zole-drone acid with one injection a year before).

Surgery was performed a few day after admission at our institution. L5 laminectomy and bilateral L5-S1 foraminal decompression were performed. On the first postoperative day the patient was mobilized and started walking with the help of crutches. Her left radicular pain disappeared immediately, although a mild back pain remained at the 5-month followup, but she reported no recurrent radicular pain.

Reduction of the bone mass due to osteoporosis increases the risk of vertebral fractures, which most of the time are treated by nonsurgical means1. Spinal cord or radicular compression resulting from osteoporotic fractures of the spine is an uncommon complication2. Osteoporotic vertebral fractures usually present as painful wedge-compression fractures without neurological symptoms, as the middle column of the spine is intact. Conversely, in burst fractures, as in our case, the middle column is involved, and bone fragments may cause compression on neural structures posteriorly or laterally. Loss of height of the vertebral body also contributes to reducing the intervertebral foraminal diameter, adding to a root compression mechanism. Additional preexisting factors such as intervertebral disc bulging, disc herniation, or lumbar canal stenosis may contribute to reducing the spinal canal diameter and to foraminal constriction. Our patient presented with mild stenosis and facet arthritis that contributed to the decompensation of the foraminal narrowing and the L5 root compression following the vertebral body collapse. The neurological consequence may vary considerably according to the level of the vertebral collapse: it may produce paraplegia in the case of spinal cord compression at the thoracic level, cauda equina syndrome, or isolated radiculopathy in cases of nerve root compression3.

The true incidence of osteoporotic vertebral fractures is not well defined because most are asymptomatic3. The incidence of neurological compromise as a result of osteoporotic vertebral fractures is thought to be low4. Osteoporotic vertebral fractures associated with neurological symptoms usually involve the thoraco-lumbar junction5. Neurological symptoms usually appear progressively after a minor trauma such as a fall on the buttocks or, as in this case, after a spontaneous fracture that occurred after a coughing spell. This latter situation remains uncommon, and as in our case it is often difficult to clearly identify the event responsible for the fracture. A spontaneous osteoporotic vertebral fracture should be suspected in case of slowly progressive neurological deficit in every elderly patient. A minor trauma episode, a coughing spell, sneezing, or an isolated spontaneous acute low back pain may be the only clinical symptom revealing the fracture. The physician must question the recent history for minor symptoms and events frequently forgotten or neglected by the patient.

Conversely, a physician with care of an “asymptomatic” osteoporotic vertebral compression fracture (discovered incidentally on plain radiographs) should maintain a high index of suspicion and thoroughly investigate the onset of any neurologic or urologic symptoms. Repeated neurological examinations should be carried out, and physicians should keep in mind that most of the neurological symptoms may develop late and manifest as radiculopathy6. CT scan allows visualization of the vertebral fracture and identification of features of spinal stenosis. MRI is essential to search for spinal cord or cauda equina compression (depending on the level) and to carefully follow and examine nerve root tracks. We recommend CT scan and MRI examination be performed in case of neurological symptoms.

Osteoporosis has become a serious public health issue1. Osteoporotic vertebral fractures are thought to be asymptomatic or responsible for iso-

Figure 1. Computed tomography scan of the spinal canal shows a complete L5 osteoporotic vertebral body collapse.
lated back pain. Neurologic complications associated with a vertebral fracture are thought to be related to conditions such as plasctocytoma, neoplastic vertebral metastasis, or primary bone tumors. These diagnoses must first be ruled out before an osteoporotic fracture can be considered. Physicians should have knowledge of such a potential development of osteoporosis in the elderly.

The great majority of osteoporotic vertebral fractures can be managed conservatively with early mobilization, appropriate analgesia, and orthosis. In the case of associated neurologic deficit, surgical management should be discussed with a spine surgeon. If conservative treatment does not allow improvement of the radiculopathy, or in the case of spinal cord compression (or cauda equina syndrome), surgery should be considered. The surgical procedure consists of decompression of the neural elements, eventually associated with stabilization, depending on the location and the potential for instability associated with the fracture. Neurologic recovery has been shown to be substantial, but early intervention is essential to maximize recovery and to limit preoperative debilitation that may occur with prolonged loss of mobility.

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