Gouty Arthropathy of the Cervical Spine in a Young Adult

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We report a young man with gouty discitis of the cervical spine. To our knowledge, our patient is the youngest patient with cervical gouty discitis reported in the literature. The clinical manifestation was similar to that of cervical spondylosis with radiculopathy. Gouty discitis was diagnosed only when tophi in the disc were found during surgery and proved by pathologic study. Surgical decompression followed by optimization of pharmacologic treatment enabled good recovery from neurologic complications. [*J Chin Med Assoc* 2007;70(4):180–182]

Key Words: cervical spine, discitis, gout

Introduction

Gout is a common systemic disorder, though gouty arthropathy sometimes affects the axial skeleton. Gouty arthropathy typically affects the distal joints of the appendicular skeleton. Its occurrence in the spine is rare, particularly at the intervertebral discs of the cervical spine.[1,2]

We report a young man with gouty discitis in the cervical spine. The initial clinical presentations included severe nuchal pain and cervical radiculopathy. These findings were similar to those of spondylosis with radiculopathy. The patient had a history of episodic hyperuricemia with gouty attacks. However, his serum uric acid level was within normal limits during the first visit and at admission. Gouty tophi were subsequently discovered in the intervertebral disc space during surgery and proved by histopathologic study.

Case Report

A 29-year-old aboriginal man, a porter, presented with a history of gouty arthritis that was under periodic follow-up. He had had episodes of gout and hyperuricemia over the last 5 years. He came to our outpatient service because of bilateral shoulder pain and numbness that radiated to the lateral side of his upper arm for 1 year. Two months before his first visit to our orthopedic department, he developed a painful sensation in both palms. He took non-steroidal anti-inflammatory drugs to relieve the numbness and pain. Nevertheless, the symptoms did not improve.

On his 1st visit, the patient reported severe nuchal pain, which was aggravated by neck rotation. He had pain and numbness over both shoulders and over the lateral aspect of his arms, as well as a painful sensation and weakness over the radial side of both palms. Tophi were noted over both elbows, but they were asymptomatic.

Atrophy of the thenar muscles over both hands was observed. Muscle power in both shoulders was grade 4 in forward flexion, grade 4 in abduction, and within normal limits in other directions. Testing of the patient's deep tendon reflexes showed normoreflexia and symmetry in all 4 extremities. He had a positive Froment sign but a negative Spurling sign and negative results on distraction tests.

Laboratory studies revealed a serum uric acid level of 4.3 mg/dL. Results of all other tests were within the normal ranges.

Plain radiographs of the cervical spine revealed spondylosis with narrowing of the disc space at the C4–C5 level (Figure 1). Magnetic resonance imaging (MRI) revealed marked narrowing at the C4–C5 disc space with endplate erosion and mild C4–C5 disc herniation with encroachment to the spinal cord (Figures 2 and 3).

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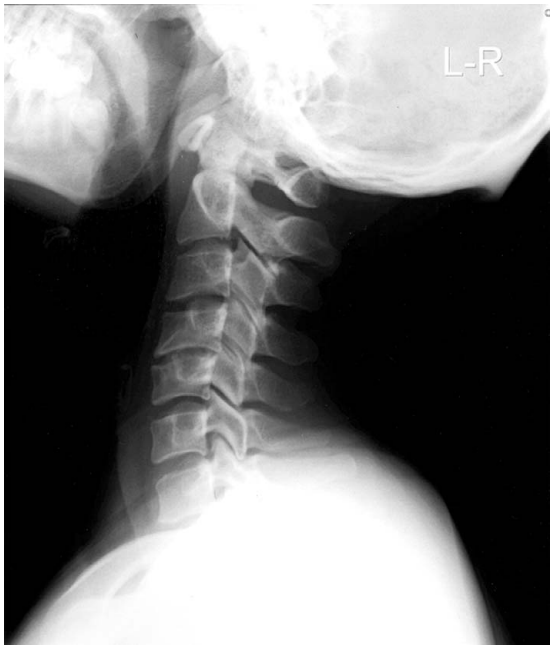

Figure 1. Lateral radiograph of the cervical spine shows spondylosis with disc-space narrowing at the C4–C5 level.

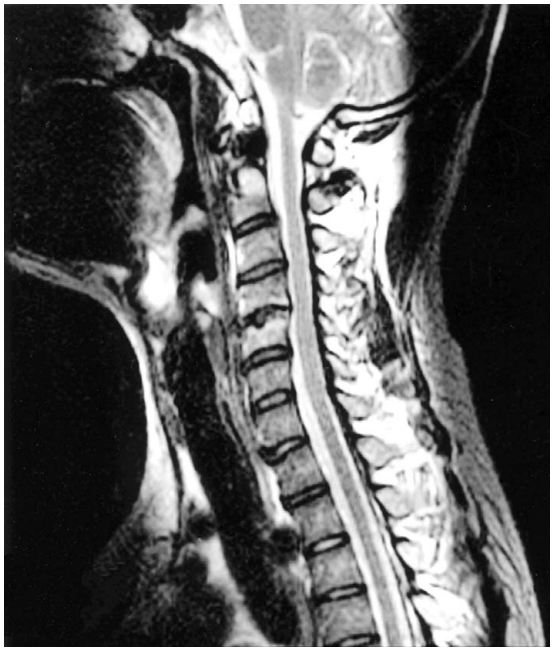

Figure 2. T2-weighted magnetic resonance imaging shows marked narrowing of the C4–C5 disc space with endplate erosion and mild C4–C5 disc herniation with encroachment to the spinal cord.

Conservative treatment with oral administration of non-steroidal anti-inflammatory drugs and physical therapy including traction were given because the clinical impression was C4–C5 spondylosis with radiculopathy. Because no definite improvement was observed

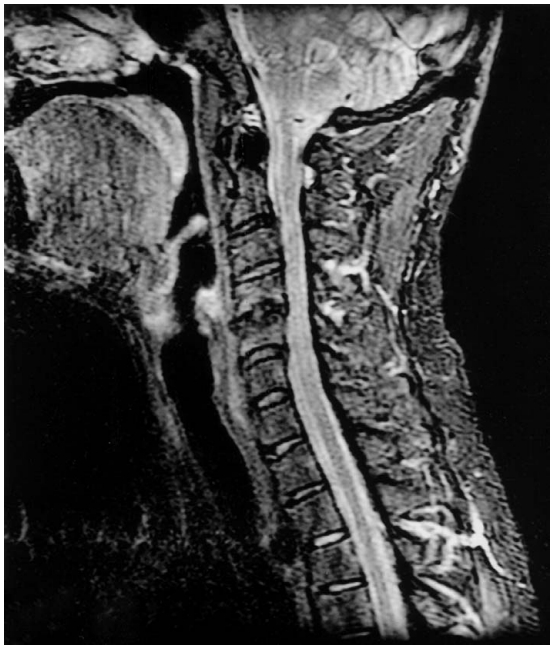

Figure 3. Short-tau inversion-recovery magnetic resonance imaging shows marked narrowing of the C4–C5 disc space with endplate erosion and mild C4–C5 disc herniation with encroachment to the spinal cord.

after conservative treatment for 2 months, surgical intervention was scheduled. The patient underwent anterior discectomy for decompression at the C4–C5 level followed by anterior interbody fusion with 1 autogenous iliac-bone strut graft. During discectomy, chalky-white, paste-like material was observed exuding from the C4–C5 disc space. The space was emptied, and the disc material was almost completely absorbed.

The chalky-white, pasty substance and the involved disc materials were sent for pathologic study to rule out tuberculous spondylitis. Histology of the formalin-treated specimen revealed amorphous eosinophilic material with needlelike clefts surrounded by histiocytes and multinucleated giant cells (Figure 4). These appearances were compatible with that of gouty tophus.

After surgery, a neck collar was used for 3 months until fusion occurred at the C4–C5 level. Colchicine was also given 0.5 mg orally twice a day for 4 weeks. During last follow-up at 1 year after surgery, the patient's symptoms had completely subsided, and muscle power of both shoulders and arms had returned to normal.

Discussion

Gout is a common metabolic disorder with well-defined clinical, biochemical, and radiologic features. Gouty arthritis affects the appendicular skeleton more commonly than it affects the axial skeleton. In the literature,

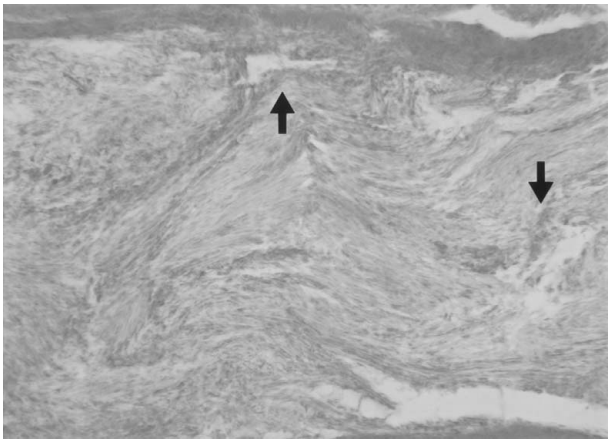

Figure 4. Histologic section of a surgically resected specimen (hematoxylin & eosin). Formalin-treated specimen reveals tophaceous deposits with needlelike clefts surrounded by histiocytes and multinucleated giant cells (black arrows) embedded in a chronic inflammatory stroma. These appearances are compatible with tophaceous deposition.

30 or fewer cases have been reported since the 1950s.[2] Most cases have involved only the lumbar spine. Gouty arthritis is extremely rare.[3]

Factors that may induce tophi formation include low temperature, decreased pH, binding to plasma protein, and trauma.[1] Although our patient had episodes of gout over 5 years, he had no history of trauma to the cervical spine or persistent hyperuricemia. The patient worked as a porter and usually used his head to assist in bearing the weight of heavy loads. This custom results in an unusually high load on the cervical spine and probably leads to the early degeneration of the intervertebral discs in the cervical spine by the 3rd decade of life. The spondylotic inflammatory changes may be the main factors that induce the deposition of urate crystals. However, the mechanism for the rapid accumulation of urate crystals in the intervertebral disc spaces remains unclear. To our knowledge, our patient is the youngest patient with cervical gouty discitis reported in the literature.

Radiologic abnormalities of spinal gouty arthropathies are nonspecific and include disc-space narrowing with ill-defined erosion of the vertebral endplates and bony destruction. The differential diagnosis should include pyogenic spondylitis and discitis. MRI features of gouty tophi of the spine have been described in recent reports. Both T1- and T2-weighted images show low-signal intensity and contrast enhancement due to avascular changes in the inflammatory stroma. However, these changes are nonspecific. They can also be found with bacterial, fungal, or mycobacterial infections; therefore, spinal gouty deposits are difficult to diagnose by using imaging studies alone.[4]

In our case, contrast-enhanced MRI had not been performed because gouty discitis was not considered until discectomy was undertaken. Cervical spondylosis was the clinical impression from the initial imaging studies, which offered no indication of the characteristic gouty tophi. Tophaceous material must be preserved in 100% alcohol for pathologic study because monosodium urate is soluble in formalin.[4] The gouty crystal can be confirmed under light and polarizing microscopy. If the crystal is not found, other histologic features of tophaceous gout, including granuloma formation with multinucleated giant cells, histiocytes, and fibroblasts surrounding amorphous cellular materials can also support the diagnosis.[5]

In our case, after gouty spondylosis was proved by pathologic study, colchicine was given 0.5 mg orally twice a day for 4 weeks. In 1978, Rask[6] reported that colchicine's effectiveness in the treatment of joint disease might not be limited to gouty arthritis. It is also effective in the treatment of the acute or chronic damaged disk syndrome.

We have reported a case of cervical spondylosis with rapid gouty tophi deposition in the intervertebral disc space and subsequent radiculopathy. We wish to emphasize the risk of spinal involvement in cases of gout, which can precipitate a variety of symptoms, ranging from pain to cord compression, that mimic those of simple cervical spondylosis. Although computed tomography and MRI may be helpful for diagnosis, their findings are nonspecific for the differential diagnosis of gout. Surgical decompression followed by optimization of pharmacologic treatment enables good recovery from neurologic complications.

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