Case Report

Tophaceous gout of the lumbar spine mimicking infectious spondylitis: a case report

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Spinal involvement is considered to be a rare complication of gout. We report a case of a 55-year-old man who presented to our hospital with severe back pain and intermittent high fever and was diagnosed initially as pyogenic or tuberculous osteomyelitis over L3-L4. Operation intervention was carried out after pharmaceutical treatment failure. Granuloma-like lesions were disclosed, the pathological examination revealed it’s a tophus, and gout was confirmed. His back pain and fever improved after operation. Allopurinol was then given for the control of his tophaceous gout over spine. Owing to stopping taking medications by himself, his tophi over spine recurred, and he underwent another operation lately. We highlight this case of tophaceous gout involving the spine that mimicked infectious spondylitis. Therefore, the clinicians should list it into the differential diagnosis in treating such patients.

Key words: Tophaceous gout, infectious spondylitis, spine

Introduction

Tophaceous gout affecting the axial skeleton is very rare and could simulate infectious spondylodiscitis or epidural abscesses on clinical signs or on magnetic resonance images. Thus, the preoperative diagnosis of tophaceous gout over spine is difficult. The clinicians should keep spinal gout in mind in treating such patients, especially in patients with history of gout. Early diagnosis of tophi over spine prompts early and appropriate medical treatments that could prevent patients from undergoing unnecessary operation.

Case report

In Jan 2006, a 55-year-old man came for help for severe back pain with lower limbs numbness and weakness for several weeks. A 4-day intermittent high fever and chilliness was claimed, and pain over the small joints of both hands was noted. In addition, he denied any symptom of urinary or bowel incontinence, nor history of trauma or weight loss. Though having history of gouty arthritis with no visible tophus, he did not take uric acid-lowering agents regularly because of the concern of the side effects from drugs. On examination, this patient was in severe distress secondary to intractable back pain. His body temperature was 39.0°C. A general physical examination showed that he had clear lungs and normal heart sounds without murmurs, and the abdominal examination showed normal results. A joint examination revealed synovitis of the small joints of both hands. No peripheral tophus or rheumatoid nodules were palpable. The lumbar-sacral spine was non-tender but straight leg raising test showed abnormal result. Strength and reflexes of his lower extremities were normal. The anal tone and sensation was normal. The range of
motion at the hips was full without pain, and the psoas sign was negative. Blood test results were: hematocrit, 22.9%; white blood cell count, 93,900/mm³; erythrocyte sedimentation rate, 112 mm/h (normal range: 0-20 mm/h); C-reactive protein, 199 mg/dL (normal range: 0-5.0 mg/dL); creatinine, 4.3 mg/dL. The serum uric acid was raised to 16.3 mg/dL. Neurologic survey showed right L2-L3 radiculopathy with mild degree chronic motor axonal loss. The spine radiograph showed no significant finding except degenerative change. Magnetic resonance imaging of spine (Fig. 1) showed disc degeneration with signal change and bulge at the L3-L4, L4-L5 and L5-S1. Abnormal heterogeneous enhancement was noted at the interlaminar and interspinal process of the L3-L4. Abnormal enhancement over flavum and posterior dural were also noted, together with spinal canal stenosis at the L3-L4. At that time, a diagnosis of suspected infectious process at the L3-L4 was made, mainly at the posterior aspect. He was then offered parenteral antibiotics under the impression of pyogenic osteomyelitis. However, he remained on febrile state, progressively aggravated back pain and paraparesis despite the use of empirical antibiotics. Therefore, total laminectomy over L3 and partial laminectomy over L2, L4 and L5 were performed emergently. Intra-operatively, a lot of tophi and small amount of clear yellow fluid were discovered over the paraspinal muscle. Tophi also caused severe destruction of L3 facet joints and infiltrated over yellow ligament. Severe adhesion between dura and yellow ligament from L2 to L5 and destruction of lamina and spinal process from L2 to L5 were also noted. No purulent discharge was found during the operative procedure. A diagnosis of gouty spondylitis of L2-L5 with spinal cord stenosis was made. Histological study of the surgically resected specimens showed tophus deposition with foreign body type of granulomatous inflammation (Fig. 2). No suppurative infiltrate was noted. The culture of the specimens confirmed no microbe. Postoperatively, all of his symptoms had subsided and he began receiving routine allopurinol treatment for the control of hyperuricemia.

In Sep 2008, severe back pain with claudication of lower limbs developed again because the patient stopped taking allopurinol by himself. Posterior fixation, disectomy, laminectomy and interbody fusion of L3-L5 were carried out. Histological examination of surgically removed material revealed tophus again. Crystal analysis of the specimens revealed needle-shaped, negatively birefringent crystals under polarized light microscopy. This patient was advised to take allopurinol regularly to decrease the chance of recurrence of gouty spondylitis. He remained well till now.

Discussion

The prevalence of gout ranges from 0.2 to 0.4% in a western population with an annual incidence of 0.01 to 0.015% [1]. Gout is characterized by precipitation
of urate crystals in the joints and periarticular tissues. Tophus deposits commonly in the metatarsophalangeal joints, ankles, knees, wrists, fingers and shoulders. Involvement over axial skeleton is an unusual manifestation of tophaceous gout. The reason why these crystal deposition diseases occasionally involve the spine is unknown. The manifestations of tophaceous gout over spine represented most of the time as backache or cervical pain. More severe neurologic symptoms included radicular pain [2,3], paraparesis [4], quadriplegia [5], resulting from cord compression.

Tophaceous gout over spine may simulate spinal infection such as epidural abscess, discitis, or vertebral osteomyelitis in patients with back pain and fever. On literatures review, total nine patients with tophi over spine including the presented patient presenting back pain in association with fever were reported [1,6-8]. Plain spine radiographs in gout may be normal or may show nonspecific degenerative changes or vertebral end plate erosions [9]. Computed tomographic scans may show focal facet joint erosion that is more consistent with gout than with degenerative facet arthropathy [9]. Spinal gout should be considered in the differential diagnosis when periarticular deposits contain very low signal foci on all MR imaging sequences [10]. Yen et al. had suggested that the following findings in their case could be useful in differentiating the condition from infectious spondylitis: (a) smooth bony erosion of the inferior endplate of vertebrae rather than irregular destruction and (b) normal bone-marrow signal intensity of the adjacent vertebrae, which is not commonly seen in infectious spondylitis [1]. However, the diagnosis of crystal deposition disease of the spine can only be confirmed by histology. In gout, the tissues reveal granulomatous infiltrate of multinucleated giant cells, histiocytes, fibroblasts and needle-shaped, negatively birefringent crystals under polarized light microscope [11].

A high index of suspicion could help clinicians to make correct diagnosis to patients with the clinical features suggestive of tophaceous gout over spine that prompted earlier medical treatment which could avoid unnecessary surgical procedure. The currently reported patient presented with severe back pain, intermittent fever and limitation in raising straight leg, which were suggestive of infectious spondylitis or osteomyelitis. And he was then given parenteral antibiotics in the beginning. However, surgical intervention was carried out at last due to his being unresponsive to medical treatment and the pathological examination of the surgically removed specimens revealed tophus. This patient experienced symptom-free period after taking allopurinol. Not taking the medicine regularly, his tophaceous gout over spine related symptoms recurred to make him undergo another surgical treatment. He was then advised to take allopurinol regularly to decrease the chance of recurrence of gouty spondylitis and recovered well till now.

Taken together, tophi over spine could simulate infectious spondylitis and the clinicians should keep in mind the possibility of that when treating such patients with history of gout or hyperuricemia. Invariably, clinicians are left with a sense of inadequacy in determining the cause of this disease, its treatment, and the complications thereof. However, making a preoperative diagnosis is difficult and in most cases patients were treated with a surgical decompression and a laminectomy [12]. Most diagnoses were made on finding chalky, whitish material during surgery, and confirmed by histological examination [12]. A closed-needle aspiration of an involved facet joint or a needle biopsy of abnormal bone or disc space may establish the presence of monosodium urate [9,13]. Noteworthy, material obtained at biopsy must be preserved in 100% alcohol if gout is suspected, because monosodium urate is soluble in formalin [14].

Patients who present with back pain and fever and have imaging studies which are suggestive of tophaceous gout over spine could be treated medically for acute gout [5,15]. Medical treatment of tophi over spine with steroids may be effective if the nature of the cord compression is acute intense inflammation [15]. Maintaining high fluid intake and the use of alkalinizing agents may limit the precipitation of uric acid and its sequelae [16]. In conclusion, tophaceous gout of the spine is rare and may imitate infectious spondylitis. Clinicians should keep spinal gout in mind when treating such patients, especially those with history of gout or hyperuricemia, to avoid unnecessary surgical treatment.

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Conflict of interest statement

The author hereby discloses that there is not any financial and personal relationships with other people, or organizations, that could inappropriately influence (bias) our work, all within 3 years of the beginning the work
References

腰椎的痛風石痛風僞裝成感染性脊椎炎：病例報告

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痛風侵犯脊椎被認為是罕見的併發症。我們報告一例五十五歲男性因為嚴重背痛及反覆高燒到本院就診，而起初被診斷為第三及第四節腰椎感染性或結核性骨髓炎。藥物治療失敗後病人接受手術治療。類似肉芽腫的病兆被發現，病理檢查顯示是痛風石，是故痛風被證實。病人的背痛及發燒在手術後有改善。Allopurinol隨即被建議使用來控制病人的脊椎痛風。由於病人的擅自停藥，其脊椎痛痛風復發導致他接受另一次手術。我們藉此病例強調脊椎之痛風石會僞裝成感染性脊椎炎。因此，臨床醫師在治療此類病人時應將其列入鑑別診斷中。

關鍵詞：痛風，感染性脊椎炎，脊椎