

Spondylodiscitis caused by sudden onset back pain following transrectal ultrasonography-guided prostate biopsy: a case report

Transrektal ultrasonografi eşliğinde prostat biyopsisi sonucunda, spondilodiskite bağlı olarak gelişen ani başlangıçlı sırt ağrısı: Olgu sunumu

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Summary

Spondylodiscitis is a serious and important clinical problem that can occur after iatrogenic interventions and should be kept in mind. Spondylodiscitis after transrectal ultrasonography (TRUS)-guided prostate biopsy is an extremely rare complication. A 70-year-old patient who presented with severe back pain, intermittent high fever, loss of appetite, and fatigue following TRUS-guided prostate biopsy was diagnosed with thoracic spondylodiscitis (T6-7) after clinical, laboratory and radiological assessments and he was treated surgically. We present this case to remind medical professionals to keep spondylodiscitis in mind in the presence of sudden onset back and low-back pain, since TRUS-guided prostate biopsy is a frequently used procedure.

Key words: Back pain; spondylodiscitis; transrectal ultrasonography-guided prostate biopsy.

Özet

Spondilodiskit, iyatrojenik girişimler sonrası gelişebilen ve göz önünde bulundurulması gereken ciddi ve önemli bir klinik sorundur. Transrektal ultrasonografi (TRUS) eşliğinde yapılan prostat biyopsisi sonrasında spondilodiskit çok nadir olarak görülmektedir. TRUS eşliğinde yapılan prostat biyopsisi sonrasında ciddi sırt ağrısı, intermitant yüksek ateş, iştahsızlık ve yorgunluk semptomları gelişen 70 yaşındaki hastaya yapılan klinik, laboratuvar ve radyolojik değerlendirme sonucunda spondilodiskit (T6-7) tanısı konuldu ve cerrahi olarak tedavi edildi. TRUS eşliğinde yapılan prostat biyopsisi çok sık kullanılan bir yöntem olmakla beraber, bu girişimden sonra ani başlayan sırt veya bel ağrısında spondilodiskiti göz önünde bulundurmanız açısından bu olgu sunuldu.

Anahtar sözcükler: Sırt ağrısı; spondilodiskit; transrektal ultrasonografi eşliğinde prostat biyopsisi.

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Submitted - October 15, 2008 (Başvuru tarihi - 15 Ekim 2008) Accepted for publication - June 8, 2009 (Kabul tarihi - 8 Haziran 2009)

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Introduction

Spondylodiscitis is a bacterial infection of the intervertebral disk and adjoining vertebrae.^[1] Several medical interventions may lead to iatrogenic spondylodiscitis. These include spinal procedures, urogenital and vascular interventions and intravenous catheter use.^[1,2] These interventions can cause spondylodiscitis either directly by inoculation or indirectly by hematogenous dissemination.^[2] Early diagnosis and treatment are very important because delays in diagnosis can lead to increased morbidity and mortality.^[3]

Transrectal ultrasonography (TRUS)-guided prostate biopsy is the most frequently used tool for the diagnosis of prostate cancers.^[4] TRUS-guided prostate biopsy is a relatively safe method that is usually well-tolerated by the patients, though minor complications such as pain, hematuria, hematospermia, rectal hemorrhage or, rarely, major complications such as sepsis, macroscopic hematuria and urinary retention can be observed.^[4,5] Spondylodiscitis after TRUS-guided prostate biopsy is an extremely rare complication. Only a few cases have been published in the literature.^[6-8] Here, we present a case of spondylodiscitis that developed after TRUS-guided prostate biopsy.

Case Report

A 70-year-old male patient suffering from severe back pain, intermittent high fever, loss of appetite, and fatigue presented to the Physical Medicine and Rehabilitation Outpatient Clinic. Review of his medical history showed that he had undergone TRUS-guided prostate biopsy four weeks before because of his high serum prostate specific antigen levels (PSA: 22.13 ng/ml) detected on routine check-up; his medical history was otherwise unremarkable. He had been given prophylactic antibiotic drugs (ciprofloxacin and metronidazole 2 days before and intravenous gentamicin during the procedure) prior to the TRUS-guided prostate biopsy. The TRUS findings were consistent with benign prostatic hyperplasia (BPH) and the histopathological features of 10 biopsy specimens showed benign prostate tissue.

Back pain began a few days after the prostate biopsy.

The patient's daughter, who was a nurse, thought the pain was a result of improper bed positioning in the hospital and gave him analgesic drugs. During this period, he had intermittent fever, loss of appetite and fatigue. Due to the persistence of these complaints and aggravation of his back pain, he presented to the Physical Therapy and Rehabilitation Outpatient Clinic six weeks after the prostate biopsy.

On physical examination, he complained of severe pain at the level of the T6-7 vertebrae during palpation of the thoracic spine. His neurological examination was completely normal. Laboratory tests showed high erythrocyte sedimentation rate (ESR: 88 mm/h) and C-reactive protein level (CRP: 11.33 mg/dl). Urinalysis showed 25 leukocytes/micl and urine culture yielded *Escherichia coli*. Serologic tests for *Brucella* and *Salmonella* were normal and PPD test was negative.

Chest radiograph was unremarkable. Plain thoracic radiographs showed reduction of T6-7 disc height. Three-phase radionuclide imaging of the bone of the patient depicted densely increased uptake by the 6th and 7th thoracic vertebrae, which was interpreted as spondylodiscitis. With these findings, the patient underwent magnetic resonance imaging (MRI) with contrast enhancement of the thoracic spine. Pre- and post-contrast multiplanar images obtained by T1- and T2-weighted turbo spin echo (TSE) and STIR sequences revealed spondylodiscitis with epidural-paravertebral soft tissue component, with constriction of the spinal canal and the neural foramina at the level of the T6-7 vertebrae (Fig. 1).

In addition to the severe back pain, the patient experienced paresthesia on his lower limbs. He was then referred to the Orthopedics Clinic where he underwent anterior decompression and bone graft reconstruction, and he received postoperative antimicrobial treatment (intravenous cefazolin sodium 1 g, 3 times daily for the first 6 weeks followed by oral amoxicillin 1000 mg, twice daily, for the next 6 weeks). The pathology of the material revealed spondylodiscitis. On postoperative day 8, the patient's back pain improved and paresthesia disappeared and he was discharged with a thoracolumbosacral orthosis. The patient was followed-up clinically and

with laboratory tests (ESR, CRP, plain radiography) every three months for two years, during which relapse was not observed.

Discussion

Transrectal ultrasonography-guided prostate needle biopsy is the ideal method to obtain prostate specimens for histological analysis and is therefore frequently used in clinical practice.^[9] In the majority of the studies, TRUS-guided prostate needle biopsy was considered a safe procedure with few major complications.^[10] In the present case report, we describe a case of spondylodiscitis, a very rare complication of TRUS-guided prostate biopsy that was not previously included in the major complications.^[4,5]

The incidence of infectious spondylodiscitis ranges from 0.4 to 2.4 per 100,000 each year.^[1] Spondylodiscitis can be classified as spontaneous or iatrogenic.^[1-3] Spontaneous spondylodiscitis is defined as spinal infection as a result of hematogenous dissemination of a community-acquired or nosocomial infection

of a distant site (most commonly the genitourinary tract), whereas infections caused by direct contamination of the disk space by the skin flora as a result of diagnostic or therapeutic interventions (discography, chemonucleolysis, spinal surgery, etc.) is referred to as iatrogenic spondylodiscitis.^[3] The frequency of high fever/sepsis following TRUS-guided prostate needle biopsy is rather low, ranging between 0.6-6.6% in various studies.^[4,11] High fever/sepsis after TRUS-guided prostate needle biopsy, usually caused by *E. coli*, is the most feared complication. It was argued that this is an iatrogenic infection of the prostate due to inoculation of bacteria during the procedure when the needle passed through the contaminated rectum.^[4,5] The use of antibiotic prophylaxis for TRUS-guided prostate biopsy significantly reduces the incidence of infective complications.^[12] Nevertheless, antibiotic prophylaxis does not eliminate the possibility of infection.^[12] The first patient reported in the English-language literature developed spondylodiscitis for not being on prophylactic antibiotics following TRUS-guided prostate biopsy.^[5] In our case, spondylodiscitis developed despite prophylactic antibiotic use.

Predisposing factors to infection include the very young and elderly, the immunosuppressed, diabetics, and a general debilitating disease such as renal failure.^[3] Our patient had none of the risk factors except his older age.



Fig. 1. Sagittal (a) and axial (b) T2-weighted MR images show the isointense lesion of the vertebral bodies at T6-7 level. At this level, narrowing of the spinal canal and neural foramina can be observed, largely due to soft tissue component in the epidural and paravertebral space.

Medical history, clinical presentation and laboratory findings are helpful in the diagnosis. Frequently, there is a history of a relatively recent infective focus elsewhere usually treated by antibiotic therapy. A history of a recent invasive procedure or surgery is important, which was the case in our patient.^[3] Clinical presentation depends on the site, extent and number of levels of spinal involvement.^[3] The onset of symptoms may be relatively acute with back pain and/or neurological deficit, associated with fever, anorexia, nausea, and spinal tenderness. Laboratory findings may vary depending on the grade and causative agent with frequently elevated ESR, white blood cell (WBC) count and CRP values or normal values.^[2] In the present case, our patient had acute back pain, intermittent fever, loss of appetite, and fatigue following TRUS-guided biopsy, and markers of inflammation (ESR, CRP) were found elevated.

Plain radiographs are usually the initial imaging study. They can not show the early signs and a negative result does not exclude the presence of the infection. Loss of definition and irregularity of the vertebral end plate usually commencing anterosuperiorly in 2-8 weeks are the earliest radiographic signs in pyogenic spondylodiscitis. This is followed by reduction of disc height, the gradual development of osteolysis and further destruction of the subchondral plate.^[1-3] Thoracic plain radiographs were taken after TRUS-guided biopsy, which showed reduction of the T6-7 disc height. Three-phase technetium-99m bone scans are sensitive but not nonspecific for spinal infections, particularly in older patients, with some degree of spondylosis and degenerative disc disease present.^[13] In our case, radionuclide bone scan showed increased uptake around the thoracic 6th and 7th vertebrae, which was interpreted as spondylodiscitis. MRI is a highly sensitive and specific imaging modality for the diagnosis of spondylodiscitis, and the MRI findings become paramount in diagnosis.^[9] MRI findings of spondylodiscitis included decreased signal intensity from the disc and adjacent portion of vertebral bodies on T1-weighted sequences and increased signal intensity from these structures on T2-weighted sequences. Contrast enhancement of the infected bone, disc and epidural and paraspinal soft tissues is also a characteristic finding. Contrast enhancement is the earliest sign and pathognomonic in the acute inflammatory epi-

sode.^[3] Our MRI findings were consistent with the literature.

Neoplastic infiltration of the bone, degenerative disc disease, intra-osseous disc herniation, primary spondylodiscitis in ankylosing spondylitis, rheumatoid arthritis, and Scheuermann disease should be considered in the differential diagnosis.^[3] In the present case, there were no clinical, laboratory or radiological findings suggesting any of these conditions.

Treatment includes conservative treatment and surgery.^[1] Antibiotics (6 weeks of intravenous antibiotics followed by 6 weeks of oral medication) and immobilization (bed rest and/or a brace) constitute the conservative treatment.^[1] Surgery may be indicated for spinal cord and radicular compression, biomechanical instability, severe persistent pain, or abscess. On the other hand, it has been argued that infections of the thoracic and cervical spine are more likely to lead to neurological sequelae.^[14] Our patient underwent an operation since he experienced paresthesia secondary to radicular compression and severe back pain. It was reported that patients with disabling back pain who were treated surgically had better clinical results than those treated with antibiotics only (26% vs 64% residual back pain).^[14] Postoperative broad spectrum antimicrobial drugs, combined with surgery, have decreased mortality to less than 5-15% in recent years.^[15] Although some authors recommended 6-8 weeks of parenteral antibiotics alone, others advocated 2-6 weeks of parenteral therapy followed by a course of oral therapy for two months or more after clinical improvement, normalization of ESR and CRP, or radiological resolution of the infection.^[15] Our patient was given parenteral antibiotic postoperatively for the first six weeks, followed by six weeks of oral antibiotic treatment.

The overall rates for mortality and recurrence of infection have been reported as 2-11%.^[1] Recurrence is usually within six months, rarely up to one year. Around one-third of the survivors suffered residual disability. Patients should be followed up over the course of the treatment and for a year after its completion in order to detect relapses. This should include clinical assessment of pain and neurological features, laboratory assessment (ESR, CRP) and

radiological examination using plain radiographs.^[1] We followed our patient clinically, radiographically and with laboratory tests every three months for two years. He was stable neurologically and clinically during the follow-up period and relapse was not noted.

This case highlights the importance of remembering spondylodiscitis when back pain occurs following TRUS-guided prostate biopsy. A careful review of the medical history of patients who present with back pain, early diagnosis and rapid initiation of treatment are critical to prevent complications.

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