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ABSTRACT

Introduction:
Infectious spondylodiscitis following spinal anesthesia is rare. The clinical features are often non-specific, making generally a delayed diagnosis. Magnetic Resonance Imaging (MRI) represents the investigation of choice in the diagnosis.

Case Report:
We report a case of spondylodiscitis following spinal anesthesia for transurethral resection of the prostate developing in a 77 year-old patient without any remarkable past medical history. Spinal anesthesia was performed in L2-L3 interspace, under aseptic technique and after antibiotic prophylaxis. Ten days later, the patient was readmitted to the hospital with abdominal pain and fever resolved by antibiotherapy. Fifteen days later, the patient was readmitted with recurrent fever and apparition of severe neurological symptoms. The diagnostic was confirmed by Magnetic Resonance Imaging. A computed tomographic guided disc biopsy identifies a staphylococcus aureus. The patient was successfully treated with antibiotic therapy. The presumed mechanism of contamination was inoculation from skin flora.

Conclusion:
Infectious spondylodiscitis following spinal anesthesia is a rare but a serious complication that should be recognized. Clinical features are nonspecific. The diagnosis is based on Magnetic Resonance Imaging. The prognosis is stated to be better when treatment is instituted early. Meticulous aseptic technique is critical to the prevention of infectious complications related to regional anesthesia.

Keywords: Infectious spondylodiscitis, Spinal anesthesia, transurethral resection of the prostate, Magnetic Resonance Imaging.
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INTRODUCTION

In recent years, spinal anesthesia have reached a wide range of applications in modern medicine especially in urologic surgery [1, 2]. However, it is a safe procedure; spinal anesthesia is not free from infectious complications which can be serious and associated with a high rate of mortality [1, 2, 3]. Infectious spondylodiscitis following spinal anesthesia is rare [1, 4]. Individual cases have been reported in the literature [4]. The clinical features are often non-specific, making generally a delayed diagnosis [5]. Magnetic Resonance Imaging (MRI) represents the investigation of choice in the diagnosis [6, 7]. A high index of suspicion is needed to ensure improved outcomes.

We report a case of infectious spondylodiscitis after spinal anesthesia for transurethral resection of prostate adenoma.

CASE REPORT

A 77-year-old male patient in a good general health was admitted for transurethral resection of prostate adenoma. His personal medical history was unremarkable. On physical exam the patient was a febrile. The urine analysis was normal. The patient underwent spinal anesthesia after antibiotic prophylaxis with cefazolin. Meticulous aseptic precautions was performed including, hand washing, face mask using, wearing sterile gloves, using sterile disposable needles and preparation of the skin with application of 10% povidone iodine. The spinal puncture was accomplished on the first attempt. The cerebrospinal fluid (CSF) was clear and the anesthetic agent was injected in L2/L3 inter-space using 22-gauge disposable spinal needle.

Transurethral resection was performed without any problem. The mean operating time was 55 minutes. Immediate postoperative period were uneventful and the patient being discharged 48 hours after surgery.

The histopathological examination showed a benign prostatic hyperplasia.
Ten days later, the patient was readmitted to the hospital with abdominal pain and fever. Clinical finding revealed a painful abdomen palpation. Laboratory tests on admission revealed a white blood cell counts (WBC) of 15450/mm$^3$ and a C-reactive protein (CRP) value of 253 mg/l and an erythrocyte sedimentation rate of 106. Urine and blood cultures were negative.

A medical treatment was initiated with cephalosporin and aminoglycosid, with a good response. The patient completely recovered after 10 days.

Eighteen days later, the patient consulted for fever, worsening low back and radicular pain. The patient’s vitals were stable, the temperature was 39.5°C, Spinal motion was limited and palpation of the second and the third lumbar vertebrae was painful. Two days after hospital admission, the patient developed lower extremity motor and sensory deficits predominant at the right lower limb.

Biological tests showed a WBC of 15800/mm$^3$ and a CRP value of 200 mg/l. Blood and urine cultures were negative.

The initial medical evaluation did not detect the underlying infection. Brain computed tomography was normal. Plain lumbar spine radiographs showed a loss of the disc height, and destruction of vertebral bodies of the L2-L3 disc space (Figure 1).

A computed tomography (CT) (Figure 2) completed by a Magnetic Imaging Resonance confirmed the diagnosis of L2-L3 spondylodiscitis (Figure 3).

A CT-guided spinal biopsy was performed and culture results showed growth of staphylococcus aureus. Antibiotic therapy including Cefotaxime, Vancomycin and Rifampicin were applied intravenously for one months. The response to antimicrobial therapy was considerably good and the patient recovered without any neurological deficits.

**DISCUSSION**

Infectious spondylodiscitis following spinal anesthesia is a serious but rare complication [1, 3, 8]. It’s incidence is unknown. Extremely-low cases were reported in the literature [4]. To our knowledge only three cases have been reported [1]. We report the fourth case in the literature and the first in Tunisia.
Several predisposing factors have been reported. Diabetes mellitus is the most commonly identified risk factor, advanced age, depressed immune status, steroid therapy, alcoholism and renal failure have been also incriminated [5, 6, 7, 9].

In our case, advanced age is the only predisposing factor.

Clinical features are non-specific [4, 5, 6, 9], patients most commonly presented with fever and worsening low back pain, neurological manifestations occur late [5, 9]. Accordingly, the diagnosis is often delayed and the average duration between the first symptoms and diagnosis has been reported to be between two and six months. As seen in our case, because of non-specific clinical presentation, the diagnosis delay was one months.

Laboratory exams are non-specific, including a biological inflammatory syndrome with leukocytosis in 35% of cases and elevated erythrocyte sedimentation rate in 75%. Blood cultures are positive in only 50% of cases [6, 7].

The pathogeny of spinal bacterial infection included mainly two mechanisms; direct inoculation of bacteria and hematogenous dissemination [8, 10, 11].

Direct inoculation may originate from the contamination of instruments or medical solutions [1, 2, 9, 12]. The role of skin flora in the initiation of the spinal infection has been well established. Sato showed that despite skin preparation with 10% povidone iodine, (35%) of epidural needles were found to be contaminated with Staphylococcus. epidermidis following insertion of an epidural catheter [1, 2, 5, 8, 9, 10].

Oral pharynx was also incriminated [1, 8, 10, 13, 14].

Multiple pathogens have been implicated but Staphylococcus aureus is the most frequently involved in most series. It isolated in more than 50% of cases. Streptococcus and Gram-negative bacilli were less isolated [5, 8, 9, 10, 11].

In our case, the most likely mechanism is an exogenous contamination from the patient's skin. Indeed, spinal anesthesia was performed in a single attempt and under aseptic technique, especially after preparation of the skin with 10% povidone iodine, hand washing, using of masks and sterile gloves by the operator. The nature of the pathogen isolated (Staphylococcus aureus) and negative blood cultures also argue in favor of this mechanism.
Because of non-specificity of clinical presentation and laboratory exams, imaging investigations offers potential advantages for diagnosis. Plain radiographs can be normal at first [6]; changes appear at least three to four weeks after onset of the disease. The computed tomography is a best modality to delineating of bony abnormality [6, 7]. Because of its higher sensitivity and specificity, the Magnetic resonance imaging (MRI) is the gold standard of diagnosis of infectious spondylodiscitis [6, 15]. It is especially useful in early stages when other imaging modalities are still or non-specific, showing decreased signal intensity from disc and adjacent vertebral bodies in T1-weighted sequences and increased signal intensity in T2 [6, 7].

The value of percutaneous biopsy as a safe and minimally invasive intervention is well established. It is often reserved for patients with negative blood cultures as in our case. It contributes to the diagnosis in 70% of cases [6]. Concerning the therapeutic strategy for iatrogenic infectious spondylodiscitis, there is no clear consensus. Immobilization and antibiotic therapy during six week seems to be the best modality [6]. Surgery is only recommended for treatment of complications [6, 7].

Our patient was successfully treated with a one month’s course of antibiotics. The evolution of infectious spondylodiscitis is usually favorable; however an appropriate and early treatment is important to ovoid neurological sequelae. The prevention is necessary and consists of application of aseptic rules throughout the procedure [8, 6].

CONCLUSION
Infectious spondylodiscitis following spinal anesthesia is a rare but a serious complication that should be recognized. Clinical feature are non-specific. The diagnosis is based on Magnetic Resonance Imaging. The prognosis is stated to be better when treatment is instituted early. Meticulous aseptic technique is critical to the prevention of infectious complications related to regional anesthesia.

CONFLICT OF INTEREST
No conflict of interest
REFERENCES


Tables

NIL

Figure Legends

Figure 1: Plain lumbar spine radiographs: Showed a loss of the disc height, and destruction of vertebral bodies of the L2-L3 disc space.

Figure 2: Computed Tomography showed a L2-L3 retrolisthesis.

Figure 3: Sagittal T1-weighted MRI of the lumbar spine, revealing: Soft tissue enhancement (blue arrow) and destruction of the intervertebral.
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Figure 2: Computed Tomography showed a l2-L3 retrolisthesis.
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