



Case Report

Iatrogenic postoperative spondylodiscitis attributed to *Burkholderia cepacia* infection in an immunocompetent patient

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ABSTRACT

Background: Pyogenic spondylodiscitis (PS) is a rare infection involving the intervertebral disk space, adjacent vertebral endplates, and vertebral bodies. PS occurs in the elderly and immunocompromised patients, and is an uncommon cause of initial and/or postoperative PS. There are only seven cases involving this organism reported in literature.

Case Description: Here, we present a 35-year-old male who following a lumbar discectomy developed a postoperative iatrogenic PS uniquely attributed to *Burkholderia cepacia*. The patient was successfully managed with postoperative surgical debridement and antibiotic therapy.

Conclusion: Rarely, *B. cepacia* may be the offending organism resulting in a postoperative lumbar PS.

Keywords: Burkholderia cepacia, Iatrogenic, Immunocompetent, Spondylodiscitis

INTRODUCTION

Pyogenic spondylodiscitis (PS) is a rare infection involving the intervertebral disk space, its adjacent endplates and vertebral bodies. Although PS is common in elderly and immunocompromised patients, it can also occur after lumbar discectomy.^[1] There are only seven cases of PS attributed to *Burkholderia cepacia* previously published in the literature. Here, we present a case of PS attributed to *B. cepacia* occurring in a 35-year-old immunocompetent male following a lumbar discectomy.

CASE DESCRIPTION

A 35-year-old male presented with low back pain of 6 months' duration which radiated into both lower limbs. His clinical examination revealed motor deficit (MRC 3/5) in the L4 and L5 distributions, with accompanying decreased sensations (50% loss).

Diagnostic studies

X-rays revealed degenerative changes in the lower lumbar spine with evidence of instability at L4-L5 on dynamic imaging [Figure 1]. The MR revealed lumbar canal stenosis at L4-L5, a left

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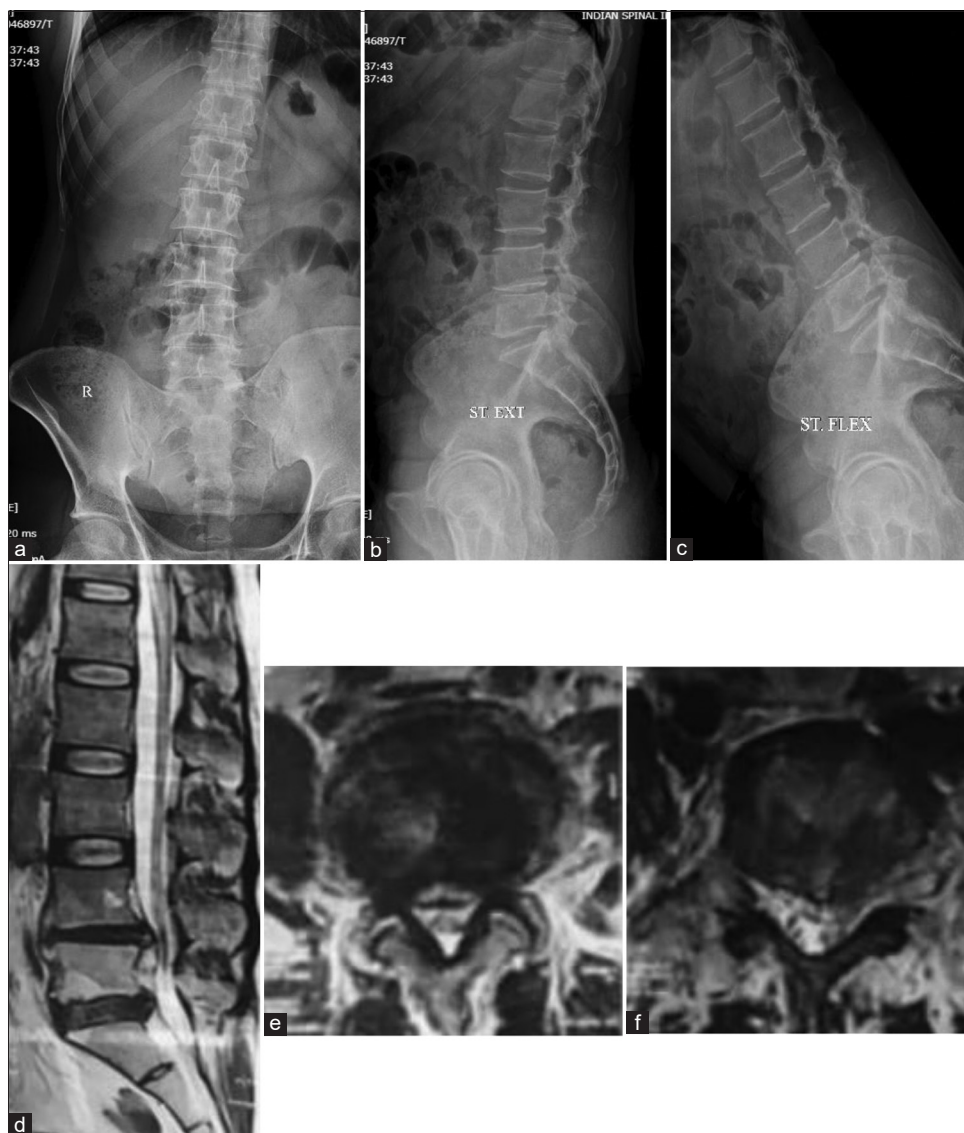


Figure 1: Plain radiographs anteroposterior (a), lateral in flexion (b) and extension (c) showing decreased joint space and focal kyphosis at L4-L5 segment. Sagittal (d) and axial T2-weighted MR images showing L4-5 segmental kyphosis with decreased disk space and lumbar canal stenosis (e) and prolapsed intervertebral disk at L5-S1 (f).

L5-S1 HNP with inferior migration, and a left sided facet cyst [Figure 1]. The preoperative hematological investigations including ESR and total leukocyte count (TLC) were normal. The patient underwent a L4-L5 minimally invasive transforaminal lumbar interbody fusion (TLIF) with L5-S1 micro-discectomy [Figure 2].

Postoperative course including readmission

The initial postsurgical course was uneventful; the patient was mobilized the next day, and discharged the following day. However, on the 10th postoperative day, he developed recurrent back pain (VAS 8), a high grade fever, difficulty in walking, and was readmitted. The following laboratory

studies were abnormally elevated; CRP-115.18 mg/dl, ESR-99/1 h, and TLC-10200 with Absolute Neutrophil Count-8410. The fever profile, including tests for dengue fever, and malaria were negative. He was started on broad-spectrum antibiotics and his symptoms were partially relieved with Meropenem 1 g thrice a day. Blood cultures showed *B. cepacia* sensitive to meropenem, and clindamycin. The diagnosis of *B. cepacia* from blood culture specimens was established utilizing Bactec Model 9240 (Becton-Dickinson) or BacT/ALERT 3D. Vitek II automated antibiotic susceptibility system was utilized to detect the relevant sensitive antibiotics. VAS score for back pain reduced to two and fever subsided. Patient was discharged and advised 6 weeks of IV antibiotics.

Subsequently, 3 weeks' post surgery, patient represented with back pain (VAS 8) and left lower limb radiculopathy. He had remained on appropriate antibiotic therapy and laboratory investigations showed improvement in the ESR (99 down to 64), and CRP (115.18 mg/dl down to 34) levels. The MR was suggestive of spondylodiscitis at the L5-S1, and he underwent a TLIF L5-S1 with insertion of Titanium Cage [Figures 3 and 4]. Notably, the right-sided L5 screw was removed as a medial pedicle breach was suspected (e.g., impingement on the L5 nerve root but not the site of the radiculopathy). The postoperative course was uneventful, and the patient was mobilized with an LSO brace. Pain (VAS score 3 for back pain,



Figure 2: Immediate postoperative anteroposterior (a) and lateral (b) radiographs showing transforaminal lumbar interbody fusion with restoration of focal lordosis and increase in disk height at L4-5, and discectomy at L5-S1.

and 2 for left lower limb radiculopathy) improved and the patient was afebrile. Patient was discharged on 6 weeks of IV Meropenem 1 g TDS, followed by oral antibiotic Clindamycin for 6 more weeks. Repeat investigations following completion of antibiotic course revealed ESR-34, CRP-11 mg/dl. At present, patient is symptom free on 6-month follow-up.

DISCUSSION

Postoperative spinal infections are largely attributed to four surgery-related risk factors: (1) longer duration; (2) intra-operative blood transfusions; (3) incidental durotomies; and (4) more than 10 people in the operation theater. PS is predominantly seen in the elderly immunocompromised individuals or those with significant co-morbidities (e.g., age over 50 with a male preponderance).

B. cepacia is a motile, aerobic Gram-negative bacillus that is ubiquitous in the environment. It can be isolated from soil, water, and plants.^[2] In hospital settings, it can be isolated from ultrasound gels, IV fluids, Dialysis fluids, nebulizers, thermometers, and potable water.^[6] It is a fast growing bacterium that can live with minimum nutrition in a hostile environment, and is disinfectant resistant. It mostly causes respiratory infections in patients with cystic fibrosis but can also result in bacteremia, endocarditis, septic arthritis, endocarditis, meningitis, peritonitis, UTI infections, and spondylodiscitis, in immunocompromised patients.^[4]

Establishing the rare diagnosis of *B. cepacia*

B. cepacia is an uncommon cause of spondylodiscitis with just seven cases described in previously published literature. Blood cultures best correctly identify the pathogen and



Figure 3: MR T2 sagittal (a) and T2 TIRM sagittal (b) and axial (c) images showing increased signal intensity at L5-S1 disk space revealing probable infective process with collection under the posterior longitudinal ligament.



Figure 4: Immediate postoperative images anteroposterior (a) and lateral (b) showing extension of instrumentation to S1 with debridement followed by interbody fusion at L5-S1 using Titanium cage and removal of right L5 screw due to medial pedicle breach.

appropriate antibiotic treatment can be initiated. *B. cepacia* has the ability to induce chromosomal beta-lactamase and alter penicillin-binding protein which often makes it resistant to beta-lactam antibiotics. It is, however, sensitive to meropenem, minocycline, fluoroquinolones, and third-generation cephalosporins.^[7] Appropriate antibiotic therapy should include 6 weeks of IV therapy followed by 6-weeks of oral antibiotics. Responses to therapy must be monitored with sequential WBC counts, ESRs, CRP levels, and MR scans to document progressive infection resolution.

Management must be considered inadequate/unsuccessful if patients' exhibit new or recurrent symptoms (e.g., increased pain/radiculopathy) while on antibiotics with persistently elevated or increasing ESR and/or CRP lab values and new pathological MRI findings consistent with progression of discitis.^[3] Our patient showed new postoperative elevation of ESR and CRP lab studies, the blood culture documented *Burkholderia*, while the MR was positive for spondylodiscitis at the L5-S1 level.

Management of PS

Management of *B. cepacia* as the cause of PS requires a combination of conservative treatment with appropriate antibiotics, with or without additional operative intervention (debridement, decompression with/without fusion if significantly unstable).^[5] The typical mean duration of parenteral antibiotics is 14.7 weeks (range 6–12 weeks).^[2] We first tried conservative management, but the recurrence of symptoms/signs, warranted surgical intervention.

CONCLUSION

B. cepacia is an uncommon hospital-acquired infection, but must be considered as a potential postoperative nosocomial infection in an immunosuppressed patient and/or in those with significant comorbidities. When it is the underlying cause of spondylodiscitis accompanied by bony destruction, it must be appropriately treated with antibiotic therapy and surgical debridement with/without fusion as indicated.

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Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Conflicts of interest

There are no conflicts of interest.

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