Spondylodiscitis with Epidural and Paravertebral Abscess Caused by *Burkholderia thailandensis* in Thailand

**ABSTRACT**

*Burkholderia thailandensis* is closely related to *Burkholderia pseudomallei* but less virulent. There are few cases reported from *B. thailandensis* infection. We reported a case of a 46-year-old male with spondylodiscitis with epidural and paravertebral abscess from *B. thailandensis*. After surgical debridement and appropriate antimicrobial therapy, the clinical was improved. *(J Infect Dis Antimicrob Agents 2014;31:177-80.)*

**INTRODUCTION**

*Burkholderia thailandensis* is usually known as non pathogenic bacteria in humans.¹ Because it is closely related to *Burkholderia pseudomallei*, it was used as a model for study of the virulence of *Burkholderia pseudomallei*.²³ We presented a rare case of *Burkholderia thailandensis*.

**CASE REPORT**

A 46-year-old man, a farmer from Chainat province, Thailand presented with right paraparesis for 1 month. Eight months prior to admission, he had back pain at interscapular region. Then 2 months prior to admission he developed progressive right paraparesis. He reported no history of trauma to his back and was healthy prior to the onset of aforementioned symptoms. He denied fever or weight loss. He worked at a sugarcane plantation in Kalasin and Khon Kaen province 7 years ago.

On physical examination, temperature was 37.4°C, pulse rate was 82/min, respiratory rate was 16/min and blood pressure was 120/70 mmHg. The patient was alert, had good color and no jaundice. He felt mild tenderness at the interscapular area of his back but no sign of inflammation on the skin. Neurological examination revealed motor power grade 3 for both lower extremities and decreased pinprick sensation below T 6 level. Deep tendon reflex was slightly increased in both lower extremities. Babinski sign was negative. The remainder of physical examination was unremarkable.

Complete blood count revealed hemoglobin 11.9 g/dL, white blood cell count 12,400 cells/mm³ with 72% neutrophil, 19% lymphocyte, 4% monocyte, 5% eosinophil and platelet count of 455,000/mm³. Blood urea nitrogen was 6 mg/dL, serum creatinine 0.7 mg/dL and fasting blood sugar was 96 mg/dL. HIV serology was negative. Chest X-ray was unremarkable. The MRI of T-L spine revealed spondylitis with discitis with vertebral collapse, anterior epidural and pre-paravertebral abscess at T 6-8 and bilateral infected pleural fluid.
Posterior decompression with instrumentation was done. PCR for TB from tissue was negative. He was treated with isoniazid, rifampicin, pyrazinamide and ethambutol.

Six month after surgery he developed fever, pain and swelling at surgical wound. Physical examination revealed redness, swelling with fluctuation under surgical scar. A greenish pus was aspirated. Bacterial culture from pus was *Burkholderia thailandensis*.

Open debridement at T5-9 was done. The operative finding found necrotic tissue and sinus tract. Pathological report demonstrated suppurative granulomatous inflammation.

The patient was treated with ceftazidime 2 gram every 8 hours and trimethoprim/sulfamethoxazole 800/160 mg every 8 hours for 37 days then

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**Figure 1.** MRI of T-L spine shows spondylitis with discitis with vertebral collapse, anterior epidural and pre-paravertebral abscess at T 6-8 and infected pleural fluid.

**Figure 2.** Colonies of *Burkholderia thailandensis* on MacConkey agar at 24, 48 and 72 hours.
continued with oral form of trimethoprim/sulfamethoxazole. After 4 months of treatment, MRI of T-L spine revealed improvement of abscess.

**DISCUSSION**

*Burkholderia thailandensis* is closely related to *Burkholderia pseudomallei*. It is gram-negative and a motile bacteria with polar tuft of two to four flagella. It grows at temperatures ranging from 25 to 42°C. The colonies are smooth and glossy with pink pigmentation on modified Ashdown's selective medium while *Burkholderia pseudomallei* colonies are rough and wrinkled with dark purple pigmentation.4 The API 20 NE and API 50 CH biochemical profiles are similar except no capacity to assimilate L-arabinose in *Burkholderia pseudomallei*. *Burkholderia thailandensis* is also recognised by a specific polyclonal antibody against *Burkholderia pseudomallei*. The antibiotic susceptibility was also similar, characterized by aminoglycoside resistance and susceptibility to ceftazidime, co-amoxiclav, chloramphenicol and doxycyclin.5 From 16 s rRNA gene sequencing there are only 15 nucleotide dissimilarities.6,7 *Burkholderia thailandensis* was isolated from soil in northeast and central region of Thailand. Although the morphology, antigenicity and microbial susceptibility are similar, the virulent is different.5 In murine model, the mean 50 percent lethal dose in *Burkholderia pseudomallei* was 182 CFU/mouse compared with 10⁹ CFU/mouse in *Burkholderia thailandensis*.2 In another experiment in mice, the inoculation with 1×10³ CFU of *Burkholderia pseudomallei* was equally lethal as 1×10⁶ CFU of *Burkholderia thailandensis*. Mice infected with *Burkholderia thailandensis* showed marked pulmonary inflammation corresponding with substantial granulocyte influx and raised myeloperoxidase level.8 *Burkholderia thailandensis* is as capable as *Burkholderia pseudomallei* to induce cell fusion after invasion and formation of multinucleated giant cell after invasion of phagocytic cells.9 From in vitro study in human respiratory, epithelial cells demonstrated more efficiency in invasion, adherence and cellular damage caused by *Burkholderia pseudomallei* compared with *Burkholderia thailandensis*.10

To our knowledge, there have been only two reported cases of infection with *Burkholderia thailandensis* in humans. The first case was a 16-year-old man from Srisaket, Thailand in 1999. He had a motorcycle accident with abdominal blunt trauma and compound fracture of right femur and tibia. During the third week after admission he developed a high fever. Blood and pus from amputation site yielded *Burkholderia thailandensis*. He received ceftazidime and continued with doxycycline and trimethoprim/sulfamethoxazole for 20 weeks.11 The second case is a 2-year-old boy. He was in a car accident in northeast Texas in 2003. He was submerged in a drainage ditch beside the road. He developed aspiration pneumonitis. *Burkholderia thailandensis* was found in his blood and respiratory secretion. The treatment was ceftazidime, trimethoprim/sulfamethoxazole at the hospital and then continued with ciprofloxacin and trimethoprim/sulfamethoxazole for 18 weeks. Upon completion of said regiment, the patient was clinically well.12

**CONCLUSION**

*Burkholderia thailandensis* is morphologically, antigenically and antimicrobially susceptible similar to *Burkholderia pseudomallei*. However, genetically and biochemically, such as the ability to assimilate L-arabinose, they are different. *Burkholderia thailandensis* rarely causes infection in humans.
and the lethal dose is higher than *Burkholderia pseudomallei*.

References


