**รายงานผู้ป่วย** **Case Report**

# รายงานผู้ป่วย : การติดเชื้อ *Burkholderia thailandensis* ที่ต่อมน้ำเหลืองทรวงอกในพระภิกษุไทย

# A Case Report: Mediastinal lymph node infection caused by *Burkholderia thailandensis* in a Thai monk

จารุภัทร อัศวพลังกูล
*แผนกอายุรกรรม โรงพยาบาลสงฆ์ กรุงเทพมหานคร*

Jaruphat Asawaplungkul
*Internal medicine section, Priest Hospital, Bangkok*

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## บทคัดย่อ

*Burkholderia thailandensis* คือ เชื้อแบคทีเรียที่ใกล้เคียงกับ *Burkholderia pseudomallei* ซึ่งเป็นสาเหตุโรคเมลิออยโดสิส ทั้งนี้ไม่ค่อยพบการก่อโรคของ *B. thailandensis* ในคน รายงานนี้เป็นการรายงานผู้ป่วยติดเชื้อชนิดนี้ที่ต่อมน้ำเหลืองทรวงอกในพระภิกษุไทยอายุ 49 ปี ไม่มีโรคประจำตัว สูบบุหรี่ 1 ซองต่อวันนาน 1 ปี และมีประวัติการขุดดินบริเวณวัดแห่งหนึ่งในจังหวัดปราจีนบุรีก่อนเกิดการเจ็บป่วย นับเป็นผู้ป่วยติดเชื้อ *B. thailandensis* รายที่สองในประเทศไทย โดยผู้ป่วยแสดงอาการไอมีเสมหะและไข้สูงนานสองสัปดาห์ก่อนเข้าโรงพยาบาลและภาพถ่ายรังสีปอดแรกรับพบจุดทึบขนาดเล็กบริเวณ lateral segment ของกลีบปอดด้านขวา โดยภายหลังเริ่มต้นให้ยาปฏิชีวนะชนิด ceftriaxone ผู้ป่วยอาการไม่ดีขึ้นร่วมกับไม่พบเชื้อก่อโรคจากผลการตรวจเพาะเชื้อจากเลือดและเสมหะ จึงพิจารณาประเมินเอกซเรย์ปอดซ้ำพบว่าเงาบริเวณกลางทรวงอกและข้างขวาของหลอดลมขยายกว้างมากขึ้น ตรวจเอกซเรย์คอมพิวเตอร์ทรวงอกพบเป็นลักษณะต่อมน้ำเหลืองทรวงอกขนาดใหญ่หลายตำแหน่ง ก้อนทึบบริเวณปอดกลีบกลางด้านขวาขนาด 3.15 เซนติเมตรและจุดขนาดเล็กในปอดสองตำแหน่ง เมื่อส่งตรวจเพาะเชื้อจากต่อมน้ำเหลืองทรวงอกผลรายงานเชื้อ B. thailandensis สอดคล้องกับผล Indirect immunofluorescence assay (IFA) melioid-IgM และ IgG antibody titer พบมีค่าสูงเพิ่มขึ้นมากกว่าสี่เท่าคือเพิ่มขึ้นจาก <1:50 และ 1:50 เป็น 1:800 และ 1:1,600 ตามลำดับ เมื่อให้ยาปฏิชีวนะชนิด ceftazidime และ sulfamethoxazole-trimethoprim เป็นระยะเวลาห้าสัปดาห์อาการผู้ป่วยดีขึ้นตามลำดับและเอกซเรย์ปอดต่อมน้ำเหลืองทรวงอกและรอยทึบบริเวณเนื้อปอดมีขนาดเล็กลง

**ติดต่อผู้นิพนธ์** : จารุภัทร อัศวพลังกูล อีเมล : jaruphata05@gmail.com

## Abstract

*Burkholderia thailandensis*, the bacteria which is closely related to *Burkholderia pseudomallei*, the causative agent of melioidosis, rarely causes human infection. This report presents a case of mediastinal lymph node infection with this bacterium in a healthy 49-year-old Thai monk with a history of one pack-year

cigarette smoking and exposure to soil around a temple in Prachin Buri Province. This is the second human case of *B. thailandensis* infection in Thailand. He presented productive cough and high-grade fever for two weeks and a nodular infiltration at the lateral segment of right middle lobe (RML) was noted on initial chest X-ray (CXR). His clinical symptoms did not improve after empirical treatment with ceftriaxone and no causative agent was isolated from sputum and blood culture. Widening mediastinum including the right paratracheal area was noted on follow-up CXR. Computed tomography (CT) of the chest demonstrated multiple rim enhancing mediastinal lymph nodes, 3.15 cm-diameter mass-like consolidation in the middle lobe of right lung and two lung nodules. *B. thailandensis* was isolated from microbiological culture of mediastinal lymph node concurrently with the results from indirect immunofluorescence assay (IFA) test revealed the melioid-IgM and IgG antibody titer more than four-fold rising from <1:50 and 1:50 to 1:800 and 1:1,600, respectively. After treatment with ceftazidime for five weeks together with sulfamethoxazole -trimethoprim, his clinical symptoms gradually improved. Decreasing size of the mediastinal lymph node and radiologic infiltration were observed on subsequent CXR.

**Correspondence**: Jaruphat Asawaplungkul E-mail: jaruphata05@gmail.com

**คำสำคัญ**
*ทรวงอก, การติดเชื้อที่ต่อมน้ำเหลือง, Burkholderia thailandensis*

**Keywords**
*mediastinum, lymph node infection, Burkholderia thailandensis*

## Introduction

*Burkholderia thailandensis*, firstly isolated from multiple sites in Thailand, is a member of *Burkholderia pseudomallei* complex.[1] It originated in the environment and is closely related to *B. pseudomallei*[2] but can be distinguished by the capacity for L-arabinose assimilation and genotypic analysis.[2-5] It also synthesizes a repeating disaccharide similar to *B. pseudomallei*, the reason for cross-reactive antibodies to the common O polyscaccharide and initially identified as *B. pseudomallei* by latex agglutination tests.[6-7] Although generally considered non-virulent soil organism,[8-9] *B. thailandensis* have been reported to infect humans.[10-14] The first case report in 1999; a 16-year old man admitted at Srisaket Hospital with multiple organ injury and wound infection from motorcycle accident. *B. thailandensis* was confirmed using extended biochemical profile demonstrating Arabinose utilization-positive *B. Pseudomallei*.[13] Another five reports were reported, three cases from the US were pneumonia and wound infection,[11-12] one case from Malaysia was diagnosed as abscess[14] and one case from China involved pneumonia.[10]

## Case report

Mediastinal lymph node infection caused by *Burkholderia thailandensis* in a Thai monk

A 49-year-old Thai monk without medical history came to the Priest Hospital presenting symptoms of productive cough and high-grade fever for about two weeks. He had a history of soil digging at a temple in Prachin Buri Province for two weeks

before presenting illness and a one pack-year cigarette smoking habit. His sensorium was intact, and he presented with 40°C fever on arrival. Unremarkable findings were noted in the physical examination. CXR on admission revealed nodular infiltration at the lateral segment of RML with right paratracheal streak thickening (Figure 1A). His clinical course did not improve after initial antibiotic treatment with ceftriaxone. No pathogenic organism was isolated from sputum and hemoculture and widening mediastinum and right paratracheal area was noted on his follow-up CXR (Figure 1B).

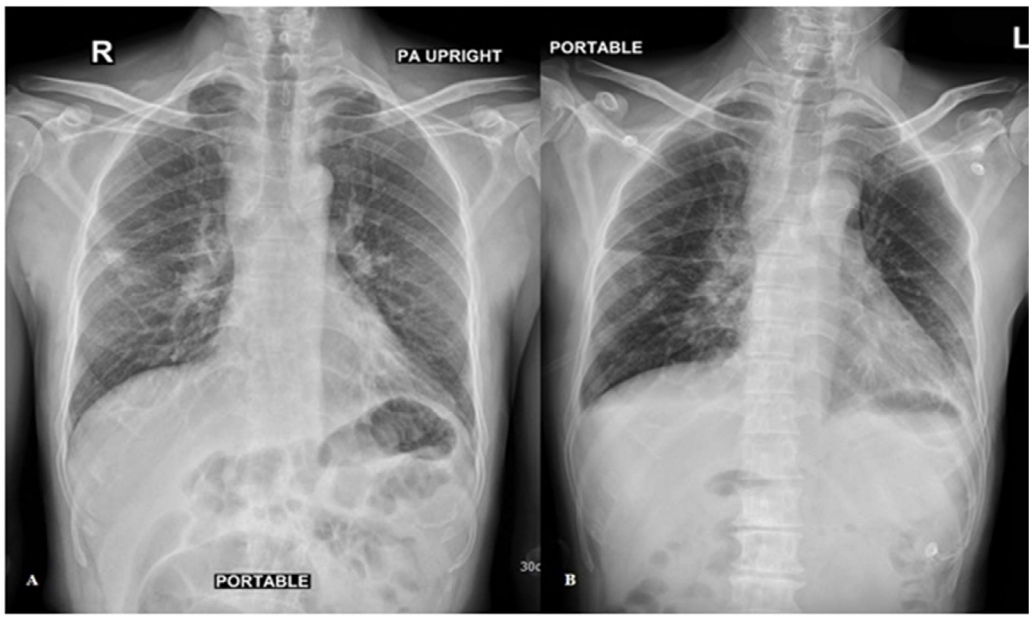


**Figure 1** Chest radiography showed nodular infiltration at lateral segment of right middle lobe and thickening of right paratracheal area (A), and developed minimal bilateral pleural effusion with increasing enlarged mediastinal area especially right paratracheal area after initial antibiotic treatment (B).

On the fourth day of admission, follow-up CT of the chest and upper abdomen (Figure 2) demonstrated a 3.15 cm mass-like consolidation at the right lateral subpleural zone of the lateral segment of RML with multiple internal small rim-enhancements and a 1.15 cm- protruding portion at the inferomedial aspect of the lesion. A 0.49 cm well-marginated nodule in the right lateral peripheral zone of the posterior segment of right upper lobe (RUL) was revealed. Multiple rim-enhancing nodes were also noted at right hilar and interlobar stations, subcarinal station, right upper and lower paratracheal stations and prevascular station. A small node with rim enhancement was found at the right lower internal jugular cervical lymph node with minimal bilateral pleural effusions. Heterogeneity of liver parenchyma was also presented on the portal venous phase in the left lobe of the liver without nodule or mass.

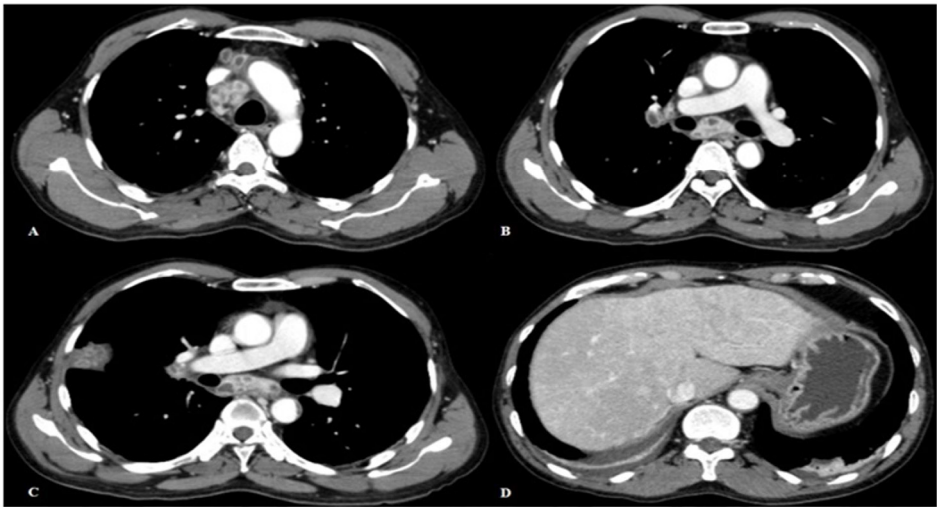


**Figure 2** Computed tomography chest and upper abdomen scan showed multiple enlarged lymph nodes with centrally low-attenuating at (A) prevascular and right paratracheal station, (B) subcarinal and right hilar station. Imaging also demonstrated mass-like consolidation with internal multiple small round rim-enhancing lesions at subpleural area of lateral segment of right middle lobe (C) and inhomogeneous liver parenchyma on portal venous phase with small amount of bilateral pleural effusion (D).

He was treated as melioidosis with intravenous ceftazidime 2 g every six hours and early surgical consultation for lymph node biopsy for bacteriologic and pathologic studies. A serologic study of melioidosis was also performed. Endobronchial ultrasound (EBUS) and transbronchial needle aspiration (TBNA) of the mediastinal lymph nodes were performed. Histology of the fine needle aspiration (FNA) sample demonstrated acute suppurative and necrotizing inflammatory cells without observed organisms [gram's stain, acid-fast bacilli (AFB) stain, reverse-transcription polymerase chain reaction (RT-PCR) for Mycobacterium complex MTC)] or atypical cells. No granuloma was observed (Figure 3 & 4). The organism was isolated using Matrix-Assisted Laser Desorption Ionization Time-at-Flight Mass Spectrometry (MALDI-TOF MS) as *Burkholderia pseudomallei* and proceeded biochemical testing based on the results of API-2ONE (bioMérieux, Marcy l'Étoile, France), showing positive for L-arabinose assimilation and negative result from lysine decarboxylase testing, which identified *Burkholderia thailandensis*. No further gene sequencing testing because of unavailability in the institutional setting. Corresponding IFA IgM and IgG antibody titers for melioidosis showed more than four-fold rising from <1:50 and 1:50 to 1:800 and 1:1,600, respectively. Other positive laboratory investigations resulted except for speckled pattern positive findings of indirect immunofluorescence test for antinuclear antibodies (ANA) at 1:1,280.

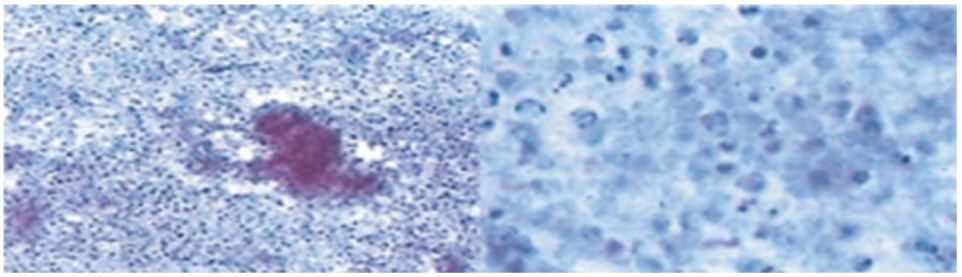

**Figure 3** EBUS with TBNA Mediastinal LN 4R, 7 cytology demonstrated abundant necrotic material mixed with degenerating acute inflammatory cells. No organism of atypical cell is seen. No granuloma is observed

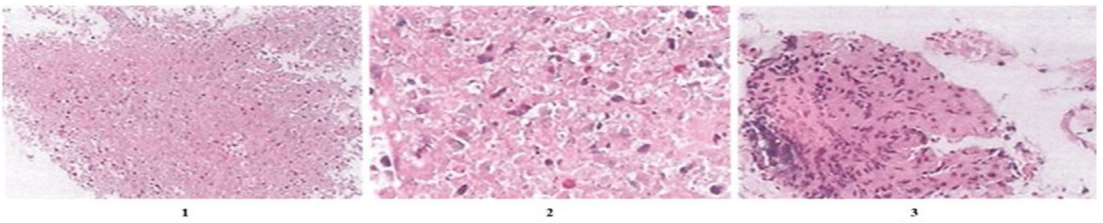


**Figure 4** One medium sized aggregate of entirely necrotic material (1, 2) and focal crushed lymphohistiocytic stroma compatible with lymph node stroma (3) without definite granuloma or malignant cell. Negative for Acid fast, Gomori's methenamine silver (GMS) stain and PCR for MTC (not shown).

The patient received intravenous ceftazidime for five weeks together with sulfamethoxazole-trimethoprim. His clinical signs gradually improved. Decreased size of the mediastinal lymph node and radiologic infiltration were observed on subsequent CXR (Figure 5A & B).

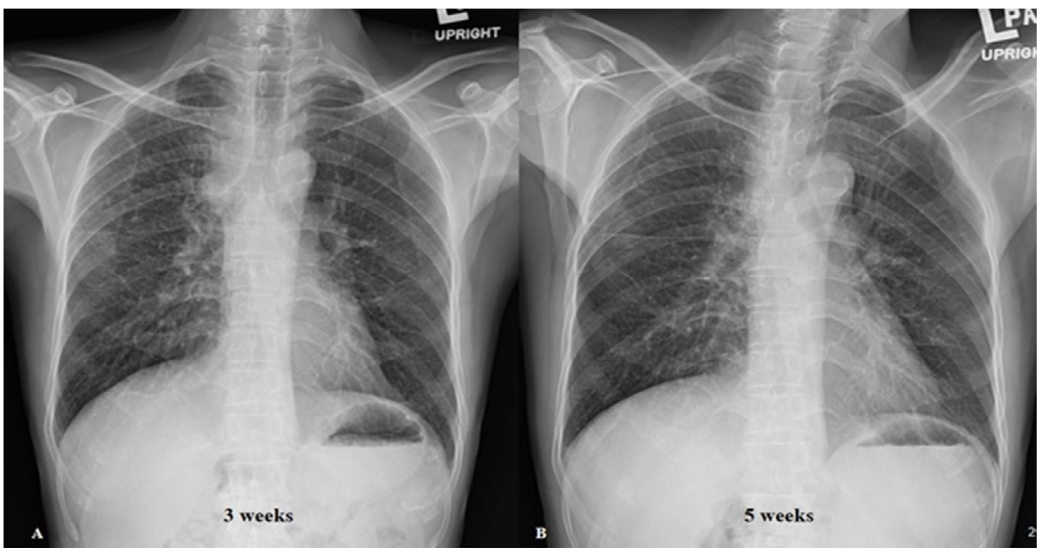


**Figure 5** Follow up chest radiography (CXR) after intravenous 3 and 5 weeks of ceftazidime with sulfamethoxazole-trimethoprim showed decrease size of right paratracheal lymph nodes and right middle lung infiltration.

## Discussion

This is the second case report of human infection by *B. thailandensis* in Thailand and its infection on mediastinal lymph node has not been previously reported. Compare to melioidosis, intrathoracic lymphadenopathy is infrequent[15] that only 3% of 540 cases of melioidosis presented with hilar lymphadenopathy,[16] while pneumonia is more common manifestation of pulmonary melioidosis occurring in about 51%.[17-18] Mediastinal or hilar adenopathy among melioidosis, usually manifest as necrotic lymph node on radiographic study, can manifest as acute,[19] subacute[20] or chronic illness.[21] Additionally, pulmonary nodules and mass-liked consolidation with pleural effusions are showed in both acute and subacute illness but in chronic course. Pleural effusion, moreover, is a thoracic manifestation of melioidosis that associated with visceral abscesses and lower lobe consolidations.[22] However, these pulmonary findings are non-specific and difficult to differentiate from bacterial causes.

The most common route of infections in the six *B.thailandensis* reported cases was direct skin inoculation (four cases of wound infection). Massive aspiration or ingestion from near-drowning was lesser cause, and the etiology was unknown in only one of pneumonia cases.[10-14] In contrast, pneumonia is the common presentation among melioidosis reflects well the inhalation cause, whereas ingestion of contaminated water was related to bacteremia melioidosis.[23]

Limitations encountered in this case included the lack of molecular sequencing data. However, such data did not alter the management and clinical outcome of the patient.In addition, positive auto-antibodies and involvement of esophageal motility in this patient may confirm the risk of auto-immune disease to melioidosis although another report postulated that auto- immune dysregulation may be the result of the infection.[24] Because the clinical manifestation of Burkholderia infection ranges widely among acute, subacute, chronic or latent forms of the disease with nonspecific features, it can often lead misdiagnosis, e.g., tuberculosis involving shared endemic areas and immunocompromised host. Exclusion of *Burkholderia* infection is crucial in the setting of endemic areas of tuberculosis where anti-tuberculosis treatment is mandated. Awareness of early appropriate investigation and treatment can improve outcome and decrease mortality rate. However, the relationship among the pathogenesis of B. thailandensis and humans remains unknown requiring additional study.

**Ethical consideration**

The Priest Hospital Institutional Review Board approved this case report with the certificate of approval number 12/64. Written and signed informed consent were obtained from the well-conscious patient for publication of this report covering all present images.

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