Melioidosis in Trinidad and Tobago

Catherine Hogan, Amanda Wilmer, Mazen Badawi, Linda Hoang, Michael Chapman, Natasha Press, Kym Antonation, Cindi Corbett, Marc Romney, Melanie Murray

Author affiliations: University of Sherbrooke, Sherbrooke, Quebec, Canada (C. Hogan); University of British Columbia, Vancouver, British Columbia, Canada (A. Wilmer, M. Badawi, L. Hoang, M. Chapman, N. Press, M. Romney, M. Murray); King Abdulaziz University, Jeddah, Saudi Arabia (M. Badawi); British Columbia Centre for Disease Control Public Health Microbiology and Reference Laboratory, Vancouver (L. Hoang); St. Paul’s Hospital, Vancouver (N. Press, M. Romney, M. Murray); National Microbiology Laboratory, Winnipeg, Manitoba, Canada (K. Antonation, C. Corbett); British Columbia Women’s Hospital, Vancouver (M. Murray)

DOI: http://dx.doi.org/10.3201/eid2105.141610

To the Editor: Melioidosis refers to infection caused by the facultative intracellular gram-negative bacterium Burkholderia pseudomallei. The clinical manifestations of melioidosis span a wide spectrum, from asymptomatic exposure or localized cutaneous infection to septic shock with multiorgan failure. Melioidosis usually occurs in residents of or travelers to disease-endemic areas in northern Australia and Southeast Asia; however, an increasing number of confirmed melioidosis cases are being reported from the Caribbean. We report a case of melioidosis acquired in Trinidad and Tobago.

In February 2014, a 17-year-old male student was admitted to a tertiary care hospital in Vancouver, British Columbia, Canada, with catecholaminergic polymorphic ventricular tachycardia and electrical storm. He had a 9-month history of dry cough that was unresponsive to multiple and prolonged courses of treatment for community-acquired pneumonia. During the 6 months before his admission, the patient had hemoptysis and radiologic evidence of pneumonia that were treated with courses of ceftriaxone and gentamicin without resolution of symptoms. Bronchoscopy and culture of lavage samples had revealed infection with Staphylococcus aureus and an organism most closely related to Actinomyces graevenitzii.

The patient had no history indicative of risk factors for recurrent sinusitis or pneumonia (e.g., cystic fibrosis, chronic granulomatous disease, Job syndrome), and no risk factors for tuberculosis or infection with dimorphic fungi. He was up to date on his vaccinations and had no pets. He was born in Jamaica, had moved to Canada at age 4, and had not traveled anywhere other than Trinidad and Tobago, Canada, and England. He had traveled to visit family in Trinidad for 2 months during the rainy season in 2012, at which time he also visited Tobago.

On day 5 of hospital admission, the patient became febrile (39.6°C), and an infectious diseases specialist was consulted. Examination revealed that the patient was clinically stable but emaciated at 45 kg. His oxygen saturation while breathing room air was 98%. Physical examination, including cardiorespiratory examination, was unremarkable. Laboratory results showed a normal hemoglobin concentration of 133 g/L; elevated leukocyte count of 22.8 × 10⁹ cells/L; neutrophils 19.4 × 10⁹ cells/L; normal platelet count of 295 × 10⁹/L; and normal creatinine of 54 µmol/L. Test results for HIV-1 and blood cultures were negative. Computed tomography scan showed dilated bronchi and dense consolidation of the right and left lower lobes. Piperacillin/tazobactam was started for presumed hospital-acquired pneumonia.

The patient underwent diagnostic bronchoscopy with bronchoalveolar lavage. Gram staining of specimens showed occasional gram-negative bacilli, and aerobic cultures grew gram-negative bacilli. Further testing with the Vitek 2 (bioMérieux, Laval, Quebec, Canada) (96%) and RapID NF (Oxoid, Nepean, Ontario, Canada) (99.9%) systems identified B. pseudomallei, but matrix-assisted laser desorption/ionization time-of-flight mass spectrometry (Vitek MS, bioMérieux) did not. Phenotypic confirmation was performed at the provincial public health and reference laboratory. Antimicrobial drug susceptibility testing performed by broth microdilution according to Clinical and Laboratory Standards Institute recommendations (1) and by Etest (bioMérieux) showed susceptibility to amoxicillin/clavulanic acid, cefazidime, imipenem, doxycycline, and trimethoprim/sulfamethoxazole. The patient’s condition improved after 2 weeks of intravenous meropenem, and antimicrobial therapy was changed to oral trimethoprim/sulfamethoxazole.

The B. pseudomallei isolate was sent to the Public Health Agency of Canada’s National Microbiology Laboratory for molecular typing. Query of 7 standard multilocus sequence typing loci (http://bpsseudomallei.mlst.net/) identified the isolate as a novel multilocus sequence type. The sequence type (1,1,2,1,5,2,1) closely resembled that of B. pseudomallei previously isolated from the Caribbean (2).

Although melioidosis was first described in the Caribbean in 1947 (3), most case reports of the disease in the area are from the past 2 decades. This case report suggests progression of the range of melioidosis to include Trinidad and Tobago. A recent study documented the presence of B. pseudomallei in soil samples and high seroprevalence rates among contacts of persons with melioidosis in Puerto Rico (4). If examined, this pattern of regional melioidosis endemicity may also be found on other Caribbean islands.

Increased clinical awareness of and improved surveillance for B. pseudomallei infection may partly explain...
emergence. Nonetheless, underascertainment probably occurs in rural areas with limited access to advanced diagnostic support and in urban areas where *B. pseudomallei* infection is not suspected because of lack of travel to classic disease-endemic areas. Because *B. pseudomallei* is a Biosafety Level 3 agent, when infectious disease specialists consider melioidosis in their differential diagnoses, they should alert the microbiology laboratory to confirm

---

**Table. Published case reports of melioidosis from the Caribbean**

| Ref. | Site of origin (year) | Age, y/sex | Type of exposure | Concurrent condition | Clinical manifestation | Diagnostic method | Treatment (duration) | Outcome |
|------|-----------------------|------------|------------------|----------------------|-----------------------|-------------------|---------------------|---------|
| (3)  | Panama (1947)         | 31/M       | Fall on buttck, TR | Polio, spinal meningitis | Buttock abscess | Abscess culture | Sulfadiazine, sulfapyridine, streptomycin, penicillin | Survived |
| (5)  | Panama (1948)         | 25/F       | UNK, TR           | None                 | Retropertitoneal abscess, sepsis | Abscess culture | Died |
| (5)  | Panama (1960)         | 20/M       | UNK               | None                 | Acute septic arthritis | Synovial fluid culture | Chloramphenicol, novobiocin, sulfisoxazole | Survived |
| (5)  | Puerto Rico (1982)    | 62/F       | UNK               | Diabetes, SLE, cirrhosis | Septic meningitis | Blood and CSF culture | Died |
| (5)  | Mexico (1986)         | 72/M       | UNK, resident     | Diabetes             | Pneumonia, splenic abscess Sepsis | Blood and sputum culture | Died |
| (5)  | Martinique (1995)     | 66/M       | UNK, resident     | Diabetes             | Pleumeral fluid culture | IV ceftazidime, then oral TMP/SMX and doxycycline (2 mo) | Survived |
| (5)  | Guadeloupe (1997)     | 4/M        | UNK, TR           | None                 | Pneumonia, pleural effusion, peritonitis | Supraclavicular and hilar biopsy culture | Died† |
| (5)  | Puerto Rico (1997)    | 11/M       | UNK, resident     | X-linked CGD         | Cerebral abscess | Blood and sputum culture | Died |
| (5)  | El Salvador (2001)    | UNK        | UNK, TR           | UNK                  | Cerebral abscess | Blood and sputum culture | Died |
| (6)  | Puerto Rico (2003)    | 55/F       | Flood water, resident | Diabetes             | Pneumonia, septic shock | Sputum culture, PCR | Died |
| (6)  | British Virgin Islands (2006) | 17/M | UNK, resident | CF | Pneumonia | Oropharyngeal and induced sputum culture | Died |
| (7)  | Aruba (2009)          | 7/F        | UNK, TR           | CF                   | Pneumonia | Oropharyngeal and induced sputum culture | Died |
| (8)  | Guadeloupe (2010)     | 15/F       | Ditch digging, resident | Asthma, PVD | Adenopathy, tumefaction | Tumefaction culture | IV ceftazidime (10 d), then oral TMP/SMX (12 wk) | Survived |
| (9)  | Martinique (2010)     | 35/M       | UNK, TR           | None                 | Diareahe, pneumonia, Breast abscesses | Blood culture, PCR | Died |
| (10) | Aruba (2012)          | 46/F       | UNK, TR           | None                 | Pneumonia, hepatitis, mycolariditis, septic shock | Abscess culture | Died |
| (4)  | Puerto Rico (2010)    | 38/M       | Landscaping, resident | None               | None | Immunohistochemistry with polyclonal Ab; PCR | Died |
| (4)  | Puerto Rico (2012)    | 60/M       | Agricultural work, resident | Diabetes             | None | Blood culture; MLST | Died |
| This study | Trinidad and Tobago (2014) | 17/M | Rainy season, TR | CPVT | Chronic pneumonia | BAL culture; MLST | Survived |

*Ab, antibody; BAL, bronchoalveolar lavage; CAD, coronary artery disease; CGD, chronic granulomatous disease; CPVT, catecholaminergic polymorphic ventricular tachycardia; CSF, cerebrospinal fluid; G-CSF, granulocyte colony-stimulating factor; IV, intravenous; MLST, multilocus sequence typing; PVD, peripheral vascular disease; Ref., reference; SLE, systemic lupus erythematosus; TMP/SMX, trimethoprim/sulfamethoxazole; TR, travel related; UNK, unknown.

†Cause of death unknown.
species identification and ensure that staff use proper bio-safety measures.

A total of 19 cases of melioidosis acquired in the Caribbean have been reported (Table). Nine of these were travel related, suggesting that melioidosis may be emerging as a travel health issue. Travelers with known risk factors for melioidosis, such as diabetes mellitus and chronic lung disease, should be informed of their increased infection risk. Physicians should include *B. pseudomallei* in the differential diagnosis of travelers with pneumonia or sepsis who are returning from the Caribbean, particularly when they have a history of travel during the rainy season, soil-contaminated wounds, or known risk factors for melioidosis.

**Acknowledgment**

We thank the National Microbiology Laboratory for confirming the identification of the *B. pseudomallei* isolate and performing molecular testing and antimicrobial susceptibility testing.

**References**

1. Clinical and Laboratory Standards Institute. Methods for antimicrobial dilution and disk susceptibility testing of infrequently isolated and fastidious bacteria. CLSI document M45-A2. 2nd ed. Wayne (PA): The Institute; 2010.

2. Godoy D, Randle G, Simpson AJ, Aanensen DM, Pitt TL, Kinoshita R, et al. Multilocus sequence typing and evolutionary relationships among the causative agents of melioidosis and glanders, *Burkholderia pseudomallei* and *Burkholderia mallei*. J Clin Microbiol. 2003;41:2068–79. http://dx.doi.org/10.1128/JCM.41.5.2068-2079.2003

3. McDowell F, Varney PL. Melioidosis, report of first case from the Western Hemisphere. J Am Med Assoc. 1947;134:361. http://dx.doi.org/10.1001/jama.1947.728802100100100

4. Deker TJ, Sharp TM, Rivera-Garcia B, Perez-Padilla J, Benoit TJ, Ellis EM, et al. Contact investigation of melioidosis cases reveals regional endemicity in Puerto Rico. Clin Infect Dis. 2015;60:243–50. http://dx.doi.org/10.1093/cid/ciu764

5. Inglis TJ, Rolim DB, Sousa Ade Q. Melioidosis in the Americas. Am J Trop Med Hyg. 2006;75:947–54.

6. Corral DM, Coates AL, Yau YC, Tellier R, Glass M, Jones SM, et al. *Burkholderia pseudomallei* infection in a cystic fibrosis patient from the Caribbean: a case report. Can Respir J. 2008;15:237–9.

7. O’Sullivan BP, Torres B, Conidi G, Smole S, Gauthier C, Stauffer KE, et al. *Burkholderia pseudomallei* infection in a child with cystic fibrosis: acquisition in the Western Hemisphere. Chest. 2011;140:239–42. http://dx.doi.org/10.1378/chest.10-3336

8. Meckenstock R, Therby A, Marque-Juillet S, Monnier S, Khau D, Pangon B, et al. Cutaneous melioidosis in adolescent returning from Guadeloupe. Emerg Infect Dis. 2012;18:359–60. http://dx.doi.org/10.3201/eid1802.111603

9. Gétaz L, Abbas M, Loutan L, Schrenzel J, Iten A, Simon F, et al. Fatal acute melioidosis in a tourist returning from Martinique Island, November 2010. Euro Surveill. 2011;16:19758.

10. Mickail N, Klein NC, Cunha BA, Schoch PA. Melioidosis breast abscesses. J Infect. 2012;64:434–5. http://dx.doi.org/10.1016/j.jinf.2011.12.016

**Address for correspondence:** Melanie Murray, BC Women’s Hospital & Health Centre, E600B, 4500 Oak St, Vancouver, BC V6H 3N1, Canada; email: Melanie.Murray@cw.bc.ca

**Probable Toxic Cause for Suspected Lychee-Linked Viral Encephalitis**

Peter S. Spencer, Valerie S. Palmer, Rajarshi Mazumder

Author affiliations: Oregon Health & Science University, Portland, Oregon, USA (P.S. Spencer, V.S. Palmer); Legacy Health, Portland (R. Mazumder)

DOI: http://dx.doi.org/10.3201/eid2105.141650

**To the Editor:** Paireau et al. (1) reported a spatiotemporal association between unexplained outbreaks of suspected acute encephalitis in children in northern Vietnam and the harvesting of lychee (*litchi*) fruit. The clinical, biologic, and immunologic characteristics of the patients suggested a viral etiology (1). However, the lychee-associated acute brain disorder, which has also been reported in Bangladesh and India (Bihar and West Bengal), could also result from ingestion of phytotoxins present in lychee fruit, specifically α-(methylenecyclopropyl)glycine (2), the lower homologue of the neurotoxic L-amino acid hypoglycine (3,4).

As previously described (5), ingestion of the hypoglycine-rich fruit of ackee, a relative of lychee, can induce a dose-dependent toxic hypoglycemic encephalopathy in poorly nourished children. The syndrome is best known from Jamaica, where ackee is widely eaten, and occurs most frequently in 2- to 10-year-old children, who develop severe hypoglycemia and metabolic acidosis. Clinical manifestations of Jamaican vomiting sickness include headache, thirst, sweating, vomiting, lethargy, seizures, coma, and death over a span of hours to days. Patients may be mildly to moderately febrile, and emesis may not be present in all cases. Heavy ingestion of the immature aril (fruit) of ackee (*Blighia sapida*) or other members of the soapberry family (Sapindaceae), including lychee (*Litchi sinensis*), rambutan (*Nephelium lappaceum*), and longan (*Dimocarpus longan*), by an undernourished child with low glycogen/glucose stores probably has the potential to result in toxic hypoglycemic syndrome.

Assessment of finger-prick blood glucose levels, which may be markedly depressed in children with severe Sapindaceae fruit poisoning, provides a rapid and convenient screening tool to identify suspected cases. Intravenous administration of glucose is the first line of treatment, along with serial monitoring of glucose, serum aminotransferase, and serum creatinine levels. Restoration of body fluid, electrolytes, glucose, and pH balance is the goal of supportive treatment.

**Note added in proof.** Subsequent to the submission of this letter, a description was published of recent outbreaks...