Case Report

Cervical osteomyelitis caused by *Burkholderia cepacia* after rhinoplasty

Lenny Weinstein, Christin A. Knowlton, Miriam A. Smith.

Division of Infectious Diseases, Department of Medicine, Long Island Jewish Medical Center, New Hyde Park, New York, 11040, USA.

Abstract
Burkholderia cepacia, previously known as *Pseudomonas cepacia*, has been implicated in vertebral osteomyelitis in patients who are intravenous drug abusers. We report a case of acute vertebral osteomyelitis in a non-intravenous drug user, following an elective rhinoplasty.
Key Words: Osteomyelitis, *Burkholderia cepacia*, Rhinoplasty.

J Infect Developing Countries 2008; 2(1):76-77.

Received 4 October 2007 - Accepted 16 December 2007.

Introduction

Burkholderia cepacia is usually non-pathogenic in healthy people. However, in the past 2 decades, *Burkholderia cepacia* has emerged as a significant human pathogen, particularly in intravenous drug users and patients with cystic fibrosis (CF) [1,2]. One highly transmissible strain spread across North America and Britain and another between hospitalized CF and non-CF patients [3]. We report a case of acute vertebral osteomyelitis caused by *Burkholderia cepacia* in a patient after elective rhinoplasty.

Case Report

A 49-year-old female with a past medical history of hypertension, diet-controlled type 2 diabetes mellitus and hyperlipidemia was admitted for severe neck pain and stiffness. The neck pain worsened over two days, with pain radiating into the upper back and development of bilateral upper extremities numbness. A recent tuberculin skin test was reportedly negative. She had quit smoking thirteen years previously and denied any alcohol consumption or illicit drug use. Three weeks prior to admission to our hospital, the patient underwent an elective rhinoplasty in Iran with no reported post-operative complications.

Physical examination demonstrated C5-6 tenderness upon palpation, with marked limitation on range of motion secondary to pain. The patient had no fever on admission. All laboratory tests were unremarkable, except for an elevated CSF protein to 234 mg/dl. Cervical CT with contrast revealed pre-vertebral soft tissue swelling from C2 to T1. MRI revealed abnormal signal involving the C5-6 vertebral bodies with an abnormal soft tissue component anteriorly as well as posteriorly in the epidural space.

A cervical CT-guided fine-needle aspiration was nondiagnostic and the patient underwent open biopsy. Based on the operative report, the vertebral body was granular and broken apart. The disc material was indurated. Partial corpectomies were performed at C5-6 because the abscess destroyed the endplates completely at the vertebral bodies. Multiple specimens including disc material and vertebral debris were sent to pathology and microbiology. Surgical specimen pathology revealed acute osteomyelitis. The culture isolate identified by Vitek (bioMérieux, Durham, North Carolina) at 48 hours yielded *Burkholderia cepacia*. Susceptibilities were determined by the Kirby-Bauer method and the E-test. Kirby Bauer methodology revealed susceptibility to ceftazidime, imipenem- cilastin, levofloxacin, meropenem and pipercillin. The meropenem MIC was 2 µg/ml, which is considered susceptible by CLSI standards [4]. The patient was treated with meropenem 1gm every 8 hours for 6 weeks with gradual resolution of neck pain and upper extremity numbness.

Discussion

Burkholderia cepacia, previously known as *Pseudomonas cepacia*, is a motile, aerobic, catalase positive, gram-negative organism, first described in 1949 by Walter Burkholder of Cornell University [5]. It is ubiquitous in the environment and is frequently found in association with soil, water and plants.

Vertebral osteomyelitis is primarily a disease of adults older than 50 years old. The overall incidence of vertebral osteomyelitis has steadily increased in recent years secondary to increasing age of the population, injection drug use and increasing rates of nosocomial bacteremia from intravascular devices and other forms of instrumentation. Life-threatening sepsis from intravenous flush solutions, outbreaks of *Burkholderia cepacia* from contaminated ultrasound gel and from contamination of albuterol and nasal spray have also been recently reported [6,7,8].

To our knowledge, this is the first report of a patient who was not an IVDA, had an elective rhinoplasty and developed acute vertebral osteomyelitis caused by *Burkholderia cepacia*. We postulate that this patient's infection occurred around the time of rhinoplasty. The patient was likely exposed to irrigation solution or nasal packing contaminated with *Burkholderia cepacia* leading to subsequent infection of her vertebral column by means of a transient bacteremia. Postoperative bleeding is increased after removal of nasal packing. Kaygusus *et al.* found that 16.9 percent of patients became bacteremic after packing removal [9].

Burkholderia cepacia needs to be considered a pathogen in patients who have undergone routine surgical procedures in proximity to the vertebral column who are subsequently diagnosed with vertebral osteomyelitis. Proper infection control at local and international levels should be evaluated to ensure safe production and utilization of medical supplies.

References

1. Wilson R, Dowling RB (1998) Pseudomonas aeruginosa and other related species. Thorax 53: 213-219.
2. Smith MA, Trowers NR, Klein RS (1985) Cervical osteomyelitis caused by Pseudomonas cepacia in an intravenous-drug abuser. J Clin Microbiol 21:445-6.
3. Holmes A, Govan J, Goldstein R (1998) Agricultural Use of Burkholderia (Pseudomonas) cepacia: A Threat to Human Health? Emerging Infectious Diseases, National Center for Infectious Diseases, Centers for Disease Control and Prevention Volume 4 Number 2, April-June.
4. Performance Standards for Antimicrobial Susceptibility Testing (2006) Sixteenth Informational Suppl. CSLI M100 –S16, Vol.26 No.3; 116.
5. Burkholder W (1950) Sour skin, a bacterial rot of onion bulbs. Phytopathology 40:115 -8.
6. Held MR *et al.* (2006) Life-threatening sepsis caused by *Burkholderia cepacia* from contaminated intravenous flush solutions prepared by a compounding pharmacy in another state, Pediatrics 118(1):e212.
7. Jacobson M, Wray R, Kovach D, Henry D, Speert D, Matlow A. (2006) Sustained endemicity of *Burkholderia cepacia* complex in a pediatric institution, associated with contaminated ultrasound gel. Infect Control Hosp Epidemiol 27:362-6.
8. Estivariz CF *et al.* (2006) An Outbreak of *Burkholderia cepacia* Associated With Contamination of Albuterol and Nasal Spray. Chest 130: 1346-53.
9. Kaygusuz I, Kizirgil A, Karlidag T, Yalcin S, Keles E, Yakupogullari Y, Alpay C (2003) Bacteremia in septoplasty and septorhinoplasty surgery. Rhinology 41: 76-9.
10. Brisse S *et al*. (1998) Distinguishing Species of the *Burkholderia cepacia* Complex and Burkholderia gladioli by Automated Ribotyping. J Clin Microbiol 38: 1876-84.
11. Al Soub H, Uwaydah AK, Hussain AH (1994) Vertebral osteomyelitis in Qatar. Br J Clin Pract 48:130-2.

Corresponding Author: Miriam A. Smith, Division of Infectious diseases, Department of Medicine at Long Island Jewish Medical Center, Staff House, rm 226, 270-05 76th Ave, New Hyde Park, NY, 11040, United States of America, Tel: 718-470-5290, Fax: 718-470-0637, e-mail: msmith@lij.edu

Conflict of interest: No conflict of interest is declared.