

Disseminated *Corynebacterium Propinquum* (CDC group ANF 3) Infection in a Patient with Reactivated Tuberculosis

D Dominquez, N Antony

Citation

D Dominquez, N Antony. *Disseminated Corynebacterium Propinquum (CDC group ANF 3) Infection in a Patient with Reactivated Tuberculosis*. The Internet Journal of Infectious Diseases. 2008 Volume 7 Number 1.

Abstract

We report the first case in the medical literature of disseminated *Corynebacterium propinquum* (C propinquum) infection in a patient with extrapulmonary tuberculosis. The microbiology and the treatment of this unusual bacterium is reviewed.

CASE REPORT

A 76 year old white male with a remote history of pulmonary tuberculosis was admitted to the hospital with chest pain and underwent a coronary artery bypass procedure. He was admitted a few weeks later in cardiorespiratory arrest. During the resuscitation the sternal wound opened and subsequently became infected with *Staphylococcus epidermidis*. The hospitalization was complicated with a right sided pleural effusion and persistent low grade fevers and night sweats. He was started on nafcillin to treat the sternal wound infection but despite this continued to become progressively ill. Thorocentesis done two weeks later grew mycobacterium TB sensitive to the standard anti tubercular medications. The white blood cell count was 4300 cell/cu mm with a differential of 72 segs, 17 lymphs, 6 monos and 2 bands. Repeated blood and urine cultures were negative. Central lines were changed frequently and the catheter tips had no growth. Despite isoniazid, ethambutol, pyrazinamide and rifampin the patient continued to have low grade fevers. A bone marrow biopsy and repeat blood cultures (2 sets) were preformed. After 48 hours of incubation, the Gram stain of the bone marrow revealed Gram positive pleomorphic bacilli which eventually grew well on 5% sheep's blood and chocolate agars under aerobic conditions. The isolate was subjected to a set of conventional biochemical tests (Specialty Labs, Inc., Santa Monica, AC.) including: Catalase, Oxidase, Motility, Gelatin, Nitrate, Urea, Bile Esculin, TSI, Glucose, Maltose, Sucrose, Mannitol, Xylose and Trealose. Results from these biochemical tests are shown in Table I. The bacterium was noted to be susceptible to ciprofloxacin, cefazolin, gentamicin, vancomycin, imipenem and cephalothin and

resistant to norfloxacin and oxacillin. He had been empirically placed on vancomycin before the identification and sensitivity were available and defervesced. He was treated for six weeks with vancomycin and on follow up six months later continued to do well.

Figure 1

Table 1 : Biochemical characteristics of isolated from Bone marrow and Blood

Catalase	+	TSI	Alk/Alk
Oxidase	-	Glucose	-
Motility	-	Maltose	-
Gelatin	-	Sucrose	-
Nitrate	+	Mannitol	-
Urea	-	Xylose	-
Bile Esculin	-	Trealose	-

DISCUSSION

C. propinquum is considered a saprophyte and is a normal flora of the mouth and mucous membranes of mammals and animals. It was formerly classified by the CDC as CDC group ANF3 and was first described by Hollis and Weaver in 1981 (1). The pathogen has been isolated infrequently from the skin, throat, nasopharynx and other miscellaneous sites (2, 3) but has not produced a disease state except for one case of endocarditis (4). Identification of the organism was derived from CDC charts and updated literature (1, 3, 5, 6). The lack of acid production of TSI and the carbohydrate panel identified this organism as a non-fermenter while the ability to reduce nitrate to nitrate distinguished it from *C. afermentans* ANF-1 group. Susceptibility testing was conducted by microtiter techniques using Pasco panels.

Due to their occasionally morphologic similarity to *Listeria*, *Erysipelothrix*, *Lactobacillus*, *Bacillus* and *Clostridium* one needs to be careful when making a microbiological identification (3). The nondiphtheriae *Corynebacterium* produce

disease by principally colonizing foreign bodies introduced into host tissue such as central venous catheters, shunts and prosthetic valves. The bacteria attach themselves to the foreign bodies and then produce a systemic illness such as sepsis, abscess or even meningitis. These infections typically occur in the immunocompromised hosts. *C. jeikeium* bacteremia resulting from presumed central line infection with the organism has been well described both in transplant recipients as well as in patients with AIDS (7).

These patients responded well to removal of the central line and vancomycin. This patient has several interesting features. Firstly, he was only relatively immunosuppressed and despite this developed both bacteremia as well as disseminated bone marrow infection. Secondly, the presumed portal of entry was the central line as has been described in *C. jeikeium*. Thirdly, he appeared to respond to the vancomycin and possibly even to one or more of the anti tubercular drugs such as rifampin which may have contributed to some degree to the rapid decrease in bacterial load and rapid clinical response seen in this patient. Fourthly, the infection appears to cause a low grade infection despite the presence of disseminated and overwhelming infection (tuberculosis) and therefore presumably results in infection with low morbidity and mortality.

In conclusion, this case represents an unusual infection caused by a bacterium that has only infrequently been known to cause illness in humans. The portal of entry appears to be through breaks in the skin and mucous membranes and the illness appears to result in a low grade

infection which responds to antimicrobial therapy fairly rapidly.

References

1. Hollis, DG and Weaver, RE (1981) Gram positive organisms: A guide to identification. Special Bacteriology Laboratory, pp 1-10. Atlanta, Centers for Disease Control. (reprinted 1986).
2. Coyle MB, Lipsky BA. *Corynebacterium* bacteria in infectious diseases: clinical and Laboratory aspects. Clinical Microbiology. Rev. 1990; 3: 227-46.
3. Riegel, P., DeBrie, D., Prevost, G., et al. (1993) Proposal of *Corynebacterium Propinquum* sp. Nov. for *Corynebacterium* group ANF-3 strains. FEMS Microbiol Lett 113: 229-234
4. Petit, P.L.C., Bok, J.W., Thompson, J., Buiting, A.G.M. and Coyle, M.B. (1994) Native-Valve Endocarditis Due to CDC Coryneform Group ANF-3: Report of a Case And Review of *Corynebacterial* Endocarditis. Clin Infec Dis 1994; 19: 897-901.
5. Murray, R.P., Baron, E.J., Tenover, F.C. and Tenover, R.H. (1995) Manual of Clinical Microbiology, 6th ed. ASM Press, Washington, D.C.
6. Riegel, P., DeBrie, D., Prevost, et al. (1993) Taxonomic study of *Corynebacterium* Group ANF-1 strains: Proposal of *Corynebacterium afermentans* s. Nov. containing the Subspecies *C. afermentans* subsp. *Afermentans* subsp. Nov. and *C. afermentans* subsp. *Lipophilum* subsp. Nov. Int. J. Syst. Bacteriol. 43: 287-292.
7. Sanchez-Porto A, Vergara de Campos A, Inigo MA, Torres-Tortosa M, Rodriguez-Iglesias M: Bacteremia caused by *Campylobacter jejuni* in 2 AIDS patients without Neutropenia. Enferm Infecc Microbiol Clin. 1994; 12 (1): 31-3.

Author Information

Delfina Dominquez, Ph.D.

University of Texas at El Paso

Nishaal Antony

University of Texas at El Paso