Corynebacterium CDC Group A-4 Native Valve Endocarditis

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A patient with endocarditis caused by *Corynebacterium* CDC Group A-4 is described. This is the first case in the literature of endocarditis caused by this bacteria, and is unique in that the patient was immune competent and the infection occurred on a native valve. This case illustrates that corynebacteria cannot be considered a contaminant and that the exact pathogen should be identified.

Corynebacteria are part of the normal flora of the skin and pharynx (1). Despite this, corynebacteria are a rare cause of infective endocarditis. Approximately 100 cases have been reported in the literature since 1893, most of them associated with immunocompromised hosts (1, 2), prosthetic valve (1–4) or drug abuse (1, 2, 5, 6). Here we describe a non-immunocompromised patient with native valve endocarditis caused by *Corynebacterium* group A-4.

There has been only one case report of a human infection (endophthalmitis) caused by this organism (7).

Case Report. A 67-year-old male tax counsellor was admitted due to shortness of breath and mild peripheral edema, starting three weeks prior to his admission. He denied having fever, but was anorectic and had lost 2 kg. For the previous few years he had been taking furosemide, 40 mg a day, for mild congestive heart failure.

On admission, he was slightly pale, his pulse rate was 104 bpm, his blood pressure 120/80 mmHg, his temperature was 38.0 °C and his respiration rate was 24 per minute. There was a holosystolic murmur grade 3/6, with maximal intensity at the apex, radiating to the axilla. The spleen was palpable 2 cm below the costal rib. There was moderate pitting edema of both legs with trophic changes. A small retinal hemorrhage with pale center (Roth's spot) was seen on funduscopic examination. Laboratory examinations showed an erythrocyte sedimentation rate of 60 mm in the first hour, hemoglobin of 9.9 g%, leukocyte count 10,730/mm^3 with a shift to the left, and microscopic hematuria.

Echocardiography of the heart revealed a small echodense mass below the anterior leaflet of the mitral valve. A diagnosis of infective endocarditis was made. Intravenous ampicillin, 12 g/day and gentamicin 80 mg twice daily were administered. Eight out of ten bottles grew *Corynebacterium* group A-4, according to the CDC criteria (2), consisting of pleomorphic gram positive rods: catalase, nitrate reduction and esculin hydrolysis were positive. Carbohydrate utilization: glucose, maltose, sucrose mannitol and xylose were positive. The bacteria was susceptible to all the antibiotics tested, except for aminoglycosides. In accordance with culture sensitivity, the administration of gentamicin was stopped. Although the patient felt better and the serum bactericidal titers (SBT) were 1:128 and 1:512 at trough and peak time points, his fever persisted for three weeks.

The ampicillin was continued for six weeks. Serum globulins and complement were within normal limits, antibodies to HIV were negative. Blood cultures were sterile two weeks after cessation of the antibiotic regimen. After one year, the patient feels well, is without any symptoms, and has returned to his normal activities. His hemoglobin is 13.6 g%, the erythrocyte sedimentation rate has normalized and the hematuria has disappeared.

Discussion. *Corynebacterium* species are part of the normal skin and pharyngeal flora. It has been estimated that as many as 10 % of blood cultures taken in the Mayo clinic are contaminated by corynebacteria (1).

The incidence of opportunistic infections due to coryneform bacteria has continued to increase with the increasing survival of severely compromised patients. The corynebacteria which have been reported as opportunistic pathogens include: C. *xerosis*, C. *pseudodiphtheriticum* (C. *hofmannii*), C. *equi (rhodococcus equi)*, and *Bacterionema matruchotti* (C. *matruchotii)* as well as the C. *jeikeinum* D-2, A-4, and G-2 groups as defined by the Special Pathogens Section of the Centers for Disease Control (CDC), Atlanta, GA.

Despite this, cases of *Corynebacterium* endocarditis are rare. Most of the reported cases were prosthetic valve endocarditis, which are accom-

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panied by a higher fatality rate compared with other infections on prosthetic valves (1, 5, 6). Our patient survived after receiving appropriate intravenous antibiotic treatment for six weeks. His case is similar to two other cases involving native valves, without immunodeficiency, who were successfully treated with antibiotics (8, 9). Both these patients had *Corynebacterium* endocarditis, but not with CDC Group A-4.

The present case is unique, not only because it is the first report of endocarditis caused by *Corynebacterium* of the CDC group A-4, but because it occurred on a native valve in an immune-competent patient. The only other previous case of a human infection caused by *Corynebacterium* group A-4 was endophthalmitis caused by a metallic foreign body (7).

The successful treatment demonstrates that patients suspected of having infective endocarditis with *Corynebacterium* contamination should be treated as having *Corynebacterium* endocarditis pending results of microbiological tests and exact identification of the isolated organisms.

References

1. **Van Scoy RE, Cohen SN, Geraci JE, Washington JA:** Coryneform bacterial endocarditis: difficulties in diagnosis and treatment. Presentation of three cases and review of the literature. Mayo Clinic Proceedings 1977, 52: 216–219.
2. **Coyle MB, Hollis DG, Groman NB:** *Corynebacterium* spp. and other coryneform organisms. In: Lennette EM, Balows A, Hawsler WJ, Shadomy HJ (ed): Manual of Clinical Microbiology, 4th ed. Washington, DC, American Society for Microbiology, 1985, p. 193–205.
3. **Murray BE, Karchmer AE, Moellering RC:** Diphtheroid prosthetic valve endocarditis. A study of clinical features and infecting organisms. American Journal of Medicine 1980, 69: 838–848.
4. **Cauda R, Tamburrini E, Ventura G, Ortona L:** Effective Vancomycin therapy for *Corynebacterium pseudodiphtheriticum* endocarditis. Southern Medical Journal 1987, 80: 1598.
5. **Chandrasekar PH, Molinari JA:** *Corynebacterium hemolyticum* bacteremia with fatal neurologic complication in an intravenous drug addict. American Journal of Medicine 1987, 82: 638–640.
6. **Farrer W:** Four valve endocarditis caused by *Corynebacterium* CDC group I1. Southern Medical Journal 1987, 80: 923–925.
7. **Hanscom T, Maxwell A:** *Corynebacterium endophthalmitis.* Laboratory studies and report of a case treated by vitrectomy. Archives of Ophthalmology 1979, 97: 500–502.
8. **Lindner PS, Hardy DJ, Murphy TF:** Endocarditis due to *Corynebacterium pseudodiphtheriticum.* New York State Journal of Medicine 1986, 86: 102–104.
9. **Eliakim R, Silkoff P, Lugassy G, Michel J:** *Corynebacterium xerosis* endocarditis. Archives of Internal Medicine 1983, 143: 1995.

Evaluation of Urogenital *Chlamydia trachomatis* Infections by Cell Culture and the Polymerase Chain Reaction Using a Closed System

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Two hundred and fifty-four specimens from males and females consulting a clinic for sexually transmitted diseases were analyzed for genital *Chlamydia trachomatis* infection. Each clinical sample was tested by the cell culture technique and the polymerase chain reaction using a closed system. When the two test systems were compared, the overall sensitivity of the polymerase chain reaction was 96 % and the specificity 94 % when compared to the cell culture technique. By use of a closed system for DNA extraction and sample transfer for the polymerase chain reaction, contamination of the samples was minimized. The polymerase chain reaction detected a higher number of *Chlamydia trachomatis* infections among both symptomatic and asymptomatic females and males, and it also detected *Chlamydia trachomatis* at an earlier stage of infection when compared to cell culture. The polymerase chain reaction did not detect *Chlamydia trachomatis* after sufficient antibiotic treatment of the chlamydial infections.

The prevalence of *Chlamydia trachomatis* in patients attending sexually transmitted disease (STD) clinics in Western Europe and North America is reported to be from 10 to 45 % (1–5). From 18 to 30 % of chlamydia-positive males (2,

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