

EIKENELLA CORRODENS ENDOCARDITIS IN AN INTRAVENOUS DRUG USER: CASE REPORT AND LITERATURE REVIEW

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A rare case of *Eikenella corrodens* endocarditis in an intravenous drug user is reported. Repeated blood cultures from the patient established the diagnosis of this infection. However, evaluation of the cardiac function using two-dimensional echocardiography with Doppler flow demonstrated a large pedunculated tricuspid vegetation. Also evident on this study was a dilated right ventricle with diminished contractility and regurgitation. Complete sterilization of the blood was achieved after a 2-week course of intravenous penicillin and gentamicin followed by an additional 4-week course of intravenous penicillin alone. Clinicians treating suspected IV drug users should be aware of the potential pathogenicity of this rare, facultative, anaerobic gram-negative bacillus (*E corrodens*). A combination of intravenous penicillin and aminoglycoside should be considered as the initial treatment followed by an additional course of intravenous penicillin for such patients with valvular vegetation. (*J Natl Med Assoc.* 1994;86:313-315.)

Key words • endocarditis • *Eikenella corrodens*
• intravenous drug users

Eikenella corrodens is a gram-negative, facultatively anaerobic bacillus found on human mucosal mem-

branes. The organism was initially thought to be nonpathogenic; however, it has been isolated either alone or with other abscesses, osteomyelitis and endocarditis.¹ Only 12 cases of *E corrodens* endocarditis have been reported in the literature. This article reports a case of endocarditis caused by *E corrodens* and *Neisseria mucosa* that resulted in a large, pedunculated tricuspid valve vegetation and mild regurgitation.

CASE REPORT

A 28-year-old black female intravenous drug user was admitted to Howard University Hospital in August 1989, because of chills, fever, chest pain, and shortness of breath for 3 days. An abscess was present adjacent to the right jugular vein at the site of a drug injection. There was no history of any dental work. In June and July 1989, she had been admitted with the same complaints, having injected herself with cocaine and heroin 48 hours before each admission. On both occasions, all blood cultures (a total of six) grew *E corrodens*. The patient, however, had signed out of the hospital each time before the blood culture results were available and therefore received no treatment. She had been treated for infection by human immunodeficiency virus and found to be negative on three occasions.

On physical examination, temperature was 104°F, pulse 116 beats/minute, respirations 26 per minute, and blood pressure 115/51 mm Hg. The neck was supple with multiple needle tracks. Examination of the lungs revealed decreased breath sounds bilaterally. A 3/6 holosystolic murmur was audible over the precordium. Abdominal and neurologic examinations were normal. Laboratory findings included a white blood cell count of 19 000/mm³ with normal differential; hemoglobin was 6.7 g/dL and hematocrit 21.5%. Three pairs of

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TABLE. CASES OF *EIKENELLA CORRODENS* ENDOCARDITIS REPORTED SINCE 1974

Reference No.	Age (Years)	Sex	Predisposing Factors*	Heart Valve Involved†	Outcome
1	56	M	Prosthetic heart valve, dental treatment	Aortic	Recovered
	72	M	Native valve disease	Aortic	Recovered
2	52	M	Native valve disease	Aortic	Died
3	41	F	Native valve disease, dental treatment	Mitral	Recovered
4	38	M	Native valve disease, dental treatment	Aortic	Recovered
5	58	M	Prosthetic heart valve, dental treatment	Aortic	Recovered
6	26	M	Acute lymphocytic leukemia	Mitral	Died
7	31	M	Intravenous drug abuse	Tricuspid	Recovered
8	26	F	Intravenous drug abuse	Mitral	Recovered
	29	M	Intravenous drug abuse	Tricuspid	Recovered
9	28	M	Intravenous drug abuse	Aortic	Recovered
10	20	M	Oral amphetamine	Tricuspid	Recovered
Present study	28	F	Intravenous drug abuse	Tricuspid	Recovered

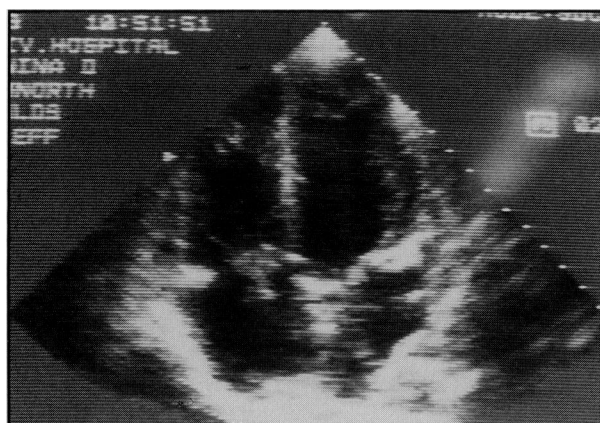


Figure. Two-dimensional echocardiogram, showing a 2-cm tricuspid valve vegetation.

blood cultures grew *E. corrodens* and *Neisseria mucosae*. Chest radiograph revealed bilateral patchy, nodular alveolar infiltrates. An electrocardiogram was nondiagnostic. Two-dimensional echocardiography (Figure) revealed a dilated right ventricle with reduced contractility, mild tricuspid regurgitation, and a large pedunculated tricuspid vegetation measuring 2 cm.

Because of the size of the vegetation and the persistently positive blood cultures, the patient was treated with a combination of penicillin 12 million U/day and gentamicin 180 mg/day intravenously for a total of 14 days, and thereafter with penicillin alone for an additional 4 weeks. Blood cultures obtained after the completion of treatment were negative.

DISCUSSION

The role of *E. corrodens* as a human pathogen is only

now becoming evident as more infections caused by this organism are reported. Although *E. corrodens* has been isolated as the only pathogen in some infections, the organism appears to be of low pathogenicity. In the 12 reported cases of endocarditis, no predominant single predisposing condition for *Eikenella* infection was identified (Table). Predisposing factors reported include prosthetic and native heart valve diseases,¹⁻⁵ acute lymphocytic leukemia,⁶ intravenous drug abuse,⁷⁻⁹ and oral amphetamine abuse.¹⁰

The aortic valve was affected more often than either the tricuspid or the mitral valve. Ten of the reported 12 cases were observed in males. Although the organism is of low pathogenicity, the mortality rate was 14% in the reported cases. Clinicians should seriously consider the diagnosis of endocarditis in patients whose blood cultures grow *E. corrodens* and institute therapy promptly. In both fatal cases, the diagnosis was not confirmed until autopsy.

In the case reported here, the organism may have reached the right side of the heart via the right jugular vein after entering the circulation from the cervical abscess adjacent to the vein. The patient had positive blood cultures for more than 8 weeks before receiving effective treatment. Despite the presence of a large vegetation, treatment with penicillin and gentamicin apparently cured the infection within 6 weeks.

Sobel et al⁸ reported relapse in a patient despite 4 weeks of penicillin therapy in appropriate doses. Cure was only achieved after prolonged therapy with a combination of carbenicillin and gentamicin.

The organism in this case was sensitive to a broad range of antibiotics. Brooks et al¹¹ have shown that 90% of strains are inhibited by the following antimicrobials:

ampicillin, penicillin, tetracycline, carbenicillin, and chloramphenicol. Variable susceptibility has been observed with aminoglycosides, and high concentrations are required to inhibit *E. corrodens*. Therefore, aminoglycosides alone should not be used to treat *Eikenella* infections. Resistance to vancomycin was noted in our in vitro susceptibility test. *Eikenella* infections frequently are mixed infections. The associated organisms tend to be gram-positive cocci rather than aerobic gram negative; hence, antimicrobials effective in treating infections with *Eikenella* are different from those used for mixed anaerobic infections.¹² Patients infected with *Eikenella* respond well to penicillin or ampicillin therapy if appropriate surgical drainage is performed. Because there was no hemodynamic instability in our patient, surgery of the tricuspid valve was not considered necessary.

SUMMARY

This case adds to a growing number of reports of *E. corrodens* endocarditis. Infection with this organism should be suspected in patients who have heart valve damage, a prosthetic heart valve, or who inject drugs intravenously. In patients with vegetations, penicillin and an aminoglycoside should be administered for a minimum of 14 days, and treatment should then be continued with penicillin parenterally for an additional 4 weeks.

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medical researchers are encouraged to conduct research on some of the problems presented and be committed to making some changes in your own lives.

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