

ENDOCARDITIS WITH AN UNCOMMON GERM

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Abstract- Enterococci are normal inhabitants of gastrointestinal tract, being responsible for 5 to 18% of infective endocarditis and the incidence appears to be increasing. Eleven patients with enterococcal endocarditis were studied. In a case series group, 10 men (average 57 years) and one woman (37 years) were studied. Two patients had rheumatic heart disease, 5 patients arteriosclerotic disease and one patient chronic renal failure on hemodialysis. Ten patients were treated with ampicillin and gentamycin. Valve replacement was performed in 3 patients with aortic valve endocarditis, one on 8th day and two at the end of the treatment. Overall clinical cure was achieved in 9 patients. Two relapses occurred and 2 patients died as a result of refractory congestive heart failure and cerebral emboli. All of the enterococcal endocarditis cases were community acquired. In conclusion, infective endocarditis in patients with preexistent valvular heart disease, community acquisition and non specific symptoms with bacteriuria should be considered as enterococcal endocarditis.

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Key words: Enterococci, endocarditis, nosocomial, relapse, congestive heart failure, cerebral emboli

INTRODUCTION

The enterococcus (group D streptococcus) is responsible for 5 to 18% of the cases of infective endocarditis and the incidence appears to be increasing (1, 2).

In the past it was said that this species caused endocarditis "in young women and old men" because it was found in association with infections of the genital and urinary tract in women of childbearing age and of the urinary tract in older men with prostatic disease (2). Today, enterococcal endocarditis is more likely to be found in drug addicts, in patients with nosocomial endocarditis and in those with chronic renal failure (3).

The clinical features of enterococcal endocarditis are similar to other streptococci. Most of enterococci are inhibited by modest concentrations of the cell

wall-active antibiotics penicillin, ampicillin, vancomycin and teicoplanin. Bactericidal anti-enterococcal activity can be achieved by combining an inhibitory cell wall-active agent and an appropriate aminoglycoside. Strains of enterococci that are highly resistant to penicillin and ampicillin, resistant to vancomycin, or highly resistant to all aminoglycosides have been identified as causes of nosocomial infections (4, 5).

Here we report 11 patients with enterococcal endocarditis.

MATERIALS AND METHODS

Patients were included in this series if 1) the clinical manifestations and echocardiographic findings (Duke criteria) were consistent with bacterial endocarditis and 2) enterococci were isolated from at least two separate cultures of blood (Duke criteria) (1, 2, 5). Demographic and laboratory data of patients were recorded. We obtained informed consent from all patients.

We used SPSS 12 for window software for analysis of data.

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RESULTS

There were 10 men and one woman. The mean age of patients was 57 years with a range of 31-72 years. The only female patient was 37 years old. Six of 10 men had genitourinary tract infections and one had acute prostatitis, three weeks to six months prior to admission. The only woman had acute pyelonephritis within 2 months prior to admission. Those observations indicate a known potential urinary source of bacteremia in 7 of the 11 patients. Table 1 summarizes demographic data and the clinical findings prior to therapy. Mean duration of symptoms was 27 days.

Nine patients had no history of cardiac disease, 2 had rheumatic heart disease and 5 were diagnosed as having atherosclerotic cardiovascular disease. Three patients had congestive heart failure at the time of admission. Five patients had aortic valve endocarditis and 6 had mitral valve endocarditis.

Most patients had normochromic, normocytic anemia, and pyuria or microscopic hematuria or both. Nine patients had white blood cell counts above 10000/mm³. Urine culture was positive in 8 patients with enterococci. Table 2 summarizes the laboratory findings prior to therapy.

Ten patients received ampicillin and gentamycin. Only one patient with chronic renal failure and hemodialysis received vancomycin and gentamycin as he didn't respond to ampicillin and gentamycin after 7 days. The antibiotic sensitivity disk diffusion test showed that it was resistant to ampicillin and gentamycin. The physical examination and laboratory work up didn't show evidence of extensive infection of the valve ring, embolism or infection of venous access site.

Relapses occurred in 2 patients. A 41 year-old man who received 30 days of combined treatment with ampicillin and gentamycin for 4 weeks. Twenty days after treatment, fever and enterococci reappeared in blood cultures, then he received another 42 days of combined treatment. Aortic valve replacement was performed after medical treatment. The second patient, a 54 year-old man, had been treated for enterococcal endocarditis with 28 days of ampicillin and only 10 days gentamycin. Clinical symptoms of relapse started 6 days after treatment. Blood cultures were again positive for enterococci.

Table 1. Demographic and clinical features in 11 patients with enterococcal endocarditis

Variable	No	Percent
Sex		
Male	10	90.9
Female	1	9.1
Predisposing factors		
Rheumatic heart disease	2	18.1
Arteriosclerotic aorta	5	45.4
Hemodialysis	1	9.1
No predisposition	3	27.2
Clinical findings		
Fever (T > 38° C)	11	100
Significant heart murmur	10	90.9
Splenomegaly	5	45.5
Petechia	8	72.7
Osler's nodes	3	27.2
Clubbing of fingers	2	18.1
Splinter hemorrhages	2	18.1
Location		
Aortic valve	5	45.4
Mitral valve	6	54.6
Echocardiography		
Vegetation	11	100
Congestive heart failure	3	27.2
Treatment		
Antibiotic alone	8	72.7
Antibiotic plus surgery	3	27.2
Relapse	2	18.1
Death	2	18.1

He received ampicillin and gentamycin for 42 days. He recovered, but valve replacement was done at the end of medical treatment.

Valve replacement was performed in 3 patients with aortic valve endocarditis, one with refractory heart failure and 2 with relapse.

Skin rash due to ampicillin developed in 4 patients. Antihistaminics or corticosteroids in small doses were effective in controlling these manifestations of hypersensitivity. Gentamycin doses were adjusted with BUN and creatinine that was performed 2-3 times per week. We did not have any problem with gentamycin.

Two patients died during antimicrobial therapy. One with refractory congestive heart failure and cerebral emboli (20 days after treatment), another one had sudden death due to arrhythmia (7 days after treatment).

Table 2. Laboratory findings in 11 patients with enterococcal endocarditis

Variables	No.	Percent
Leukocytosis plus polynucleosis	9	81.8
Normal leukocyte count	2	18.1
Normochromic normocytic anemia	10	90.9
Positive blood culture	11	100
Positive urine culture	8	72.7
High ESR (> 100/h)	11	100

DISCUSSION

Enterococci are part of the normal flora of the bowel, genital tract and anterior urethra. The genitourinary tract is a common portal of entry of organisms in patients with enterococcal endocarditis (1, 2) and was presumably the portal of entry in 6 (54.5%) of the patients in the present series.

The clinical features and cardiac manifestations of enterococcal endocarditis are similar to other bacteria. Regarding treatment of enterococcal endocarditis, most recommendations still advise combined treatment with penicillin or ampicillin and an aminoglycoside (6). In fact, all enterococci causing endocarditis must be screened to define antimicrobial resistant patterns. For organisms with high-level resistance to penicillin (MICs > 16 µg/ml), vancomycin is the agent of choice for synergistic therapy. For organisms resistant to both penicillin and vancomycin, teicoplanin may be useful (7). All of our patients were treated with high dose ampicillin and gentamycin for 4 weeks. Two patients had relapse and they received the same drugs for 6 weeks. One of our patients with chronic renal failure and hemodialysis did not respond to ampicillin and gentamycin after 7 days with persistent fever. The enterococci cultured from his blood were resistant to ampicillin, so we changed his regimen to vancomycin and gentamycin. The fever disappeared after 5 days and treatment of this patient was continued for six weeks.

Standard therapy for enterococcal endocarditis should continue for a minimum of 4 weeks (7). Wilson *et al.* recommended that patients who had symptoms of enterococcal endocarditis for more than 3 months or patients with mitral valve infection should receive at least 6 weeks of antimicrobial therapy, while patients without these high-risk factors could be treated for 4 weeks (8).

The fever associated with infective endocarditis usually resolves within two to three days of the start of antibiotic treatment (9). The most common cause of persistent fever is extensive infection of the valve ring, embolism or infection of venous access sites and drug resistance (1, 9).

Our recommendation for the therapy of enterococcal endocarditis is ampicillin and an aminoglycoside (gentamycin) for 4 weeks (in susceptible organisms). If relapse occurs, the treatment should be continued for 4-6 weeks. Extreme caution for adverse reaction of aminoglycoside especially renal toxicity and dose adjustment is very important.

Conflict of interests

We have no conflict of interests.

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