นิพนธ์ต้นฉบับ

Six Years of Native Valve Infective Endocarditis at Prapokklao Hospital

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บทคัดย่อ **ภาวะเยื่อบุหัวใจอักเสบของผู้ป่วยในโรงพยาบาลพระปกเกล้า : ศึกษาย้อนหลัง 6 ปี**

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วารสารศูนย์การศึกษาแพทยศาสตร์คลินิก โรงพยาบาลพระปกเกล้า 2546;20:135-142.

วัตถุประสงค์ เพื่อศึกษาถึงอายุ เพศ predisposing cardiac discase เชื้อสาเหตุ ลักษณะทางคลินิก ผลทางการตรวจทางห้องปฏิบัติการ ภาวะแทรกซ้อน และผลการรักษาผู้ป่วยเยื่อบุหัวใจอักเสบติดเชื้อที่รับไว้รักษาในโรงพยาบาลพระปกเกล้า

วัสดุและวิธีการ ได้ทำการศึกษาย้อนหลังจาก medical records ของผู้ป่วยที่ได้รับการวินิจฉัยว่าเป็นโรคเยื่อบุหัวใจอักเสบติดเชื้อ (ICD 10 code I 33.0) จากกลุ่มงานอายุรกรรมโรงพยาบาลพระปกเกล้า โดยใช้เกณฑ์วินิจฉัยจาก Durack DT, Lukes AS and Bright DK. : new criteria for diagnosis of infective endocarditis : utilization of specific echocardiographic findings.

ผลการศึกษาและบทสรุป ระหว่างเดือน ตุลาคม พ.ศ. 2540 – กันยายน พ.ศ. 2546 มีผู้ป่วยผู้ใหญ่ที่ได้รับการวินิจฉัยว่าเป็นโรคเยื่อบุหัวใจอักเสบติดเชื้อและรับไว้ในโรงพยาบาลพระปกเกล้า จำนวน 43 ราย สัดส่วนชายต่อหญิงเป็น 1.4 ต่อ 1 อายุเฉลี่ย 53.4 ปี ร้อยละ 81.4 มีโรคหัวใจอยู่ก่อนแล้ว เชื้อสาเหตุส่วนใหญ่คือ Streptococci (ร้อยละ 48.8) ตรวจพบว่าผู้ป่วยมีไข้และเสียงฟู่ที่หัวใจ ร้อยละ 93 และ ร้อยละ 76.7 ตามลำดับ ภาวะหัวใจล้มเหลวเป็นภาวะแทรกซ้อนที่พบบ่อยที่สุด (ร้อยละ 23.3) ผู้ป่วยร้อยละ 18.6 ถึงแก่กรรมโดยสาเหตุของการเสียชีวิตคือภาวะหัวใจล้มเหลว เส้นเลือดสมองอุดตัน ปอดบวม

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Introduction

Infective endocarditis is the disease caused by microbial infection of the endothelial lining of the heart. The clinical spectra range from acute fulminating infection to chronic indolent syndrome. The morbidity and mortality rates remain high. Early recognition and early appropriate management are very important for a favorable outcome. Infective endocarditis today is a different disease form that seen in the past in many aspects such as changes in patients, changes in the etiologic organisms, changes in diagnostic methods and changes in antibiotics[1–5]. Knowledge about these changes could improve strategies for management of infective endocarditis. However, there are only few studies providing these basic data in Thailand.[6–10]

Objective

This study aims to examine the patients diagnosed with infective endocarditis, in terms of age, sex, predisposing cardiac diseases, causative organisms, clinical manifestations, laboratory findings, complications and the results of treatment.

Materials and Methods

The medical records with diagnosis of infective endocarditis (ICD 10 CODE I33.0) from the department of medicine of Prapokklao Hospital in 6 years period (October 1997 to September 2003) were evaluated. The criteria for diagnosis was adapted from Durack D.T., Lukes A.S. and Bright D.K. : new criteria for diagnosis of infective endocarditis : utilization of specific echocardiographic findings. (Table 1)[11]

Table 1. Criteria for diagnosis of infective endocarditis

Major criteria	Minor criteria
– Positive blood culture : Typical microgranism for infective endocarditis from two separate blood culture : Persistently positive blood culture, defined as all of three or a majority of four or more separate blood cultures. – Evidence of endocardial involvement : Positive echocardiogram (vegetation or abscess) : New valvular regurgitation.	– Predisposition : predisposing heart condition or intravenous drug use. – Fever ≥ 38.0°C (100.4°F) – Vascular phenomena : major arterial emboli, septic pulmonary infarcts, mycotic aneurysm, intracranial hemorrhage, conjunctival hemorrhages, janeway's lesions. – Immunological pheomena : glomerulonephritis, Osler's nodes, Roth's spots, rheumatoid factor. – Microbiological evidence : positive blood culture but not meeting major criterion or serologic evidence of active infection with organism consistent with infective endocarditis – Echocardiogram : consistent with infective endocarditis but not meeting major criterion.

The diagnosis of infective endocarditis requires two major criteria or one major and three minor criteria or five minor criteria.

The medical record of the patients met these criteria were reviewed. Data collection and analysis of age, sex, predisposing condition, microbiology, anatomic location of vegetation, clinical manifestations, laboratory findings, complications and outcome of treatment were performed.

Results

From October 1997 to September 2003, there were 69 adult patients with the final diagnosis of infective endocarditis. The medical records of 10 patients were not available. Sixteen patients whose manifestations of infective endocarditis did not meet the criteria were excluded .

Among 43 included patients, there were 25 men (58.1 percent) and 18 women (41.9 percent). The oldest was 80 years old and the youngest was 15 years old. Age and sex distributions of patients are summarized in Table 2.

The distribution of the predisposing conditions are shown in table 3. The underlying cardiac lesions were identified in 35 of 43 patients (81.4 Percent), including 7 cases of rheumatic valvular disease (16.3 percent), 4 cases of degenerative valvular disease (9.3 percent), 2 cases of congenital heart disease (4.6 percent), 2 cases of mitral valve prolapse (4.6 percent) and 20 cases of mitral regurgitation with unknown etiology (46.5 percent). For 2 cases of congenital heart disease, one had atrial septal defect and the other had tetralogy of fallot. Two

Table 2 Age and sex distributions of patients.

Age (years)	Male	Female	Total (percent)
15 - 30	4	2	6 (13.9)
31 - 45	5	5	10 (23.2)
46 - 60	9	3	12 (27.9)
61 - 75	6	6	12 (27.9)
> 75	1	2	3 (7.1)

Table 3 Predisposing conditions of infective endocarditis

Predisposing Conditions	No of Patients	(Percent)
Rheumatic heart disease	7	(16.3)
Degenerative heart disease	4	(9.3)
Congenital heart disease	2	(4.6)
Mitral valve protease	2	(4.6)
Mitral regurgitation (Unknown etiology)	20	(46.5)
Intravenous drug abuser	2	(4.6)
None	6	(13.9)

patients (4.6 percent) were intravenous drug abusers and six patients (13.9 percent) had no identifiable predisposing conditions.

Mitral valve was the most common valve involved. The frequency of anatomic locations of vegetation is presented in Table 4.

Fever and dyspnea were common presentations (93.0 percent and 67.4 percent respectively). Heart murmurs were noted in 76.7 percent of patients. Other important clinical manifestations on admission are shown in Table 5.

The initial laboratory findings are shown in Table 6. Leucocytosis and anemia were found in the majority of patients (65.1 percent and 62.8 percent respectively.) Urinalysis

Table 4 Anatomic location of vegetation.

Anatomic location	No of Patients (Percent)	
Mitral	24	(55.8)
Aortic	12	(27.9)
Tricuspid	6	(13.9)
Interventricular septum	1	(2.3)

Table 5 Clinical manifestations of infective endocarditis

Manifestation	No of Patients (Percent)	
Fever	40	(93.0)
Heart murmur	33	(76.7)
Dyspnea	29	(67.4)
Cough	25	(58.1)
Myalgia / Arthralgia	16	(37.2)
Hemiparesis	6	(13.9)
Splenomegaly	4	(9.3)
Janeway lesions	1	(2.3)
Roth's spots	1	(2.3)

Table 6 Initial laboratory findings

Findings	No of Patients (Percent)	
Leucocytosis (wbc > 10,000/mm3)	28	(65.1)
Anemia (hematocrit < 33%)	27	(62.8)
Microscopic Hematuria	18	(41.9)
Albuminuria	14	(32.6)
Impaired renal function (creatinine > 2 mg%)	19	(44.2)

showed microscopic hematuria in 41.9 percent of patients and albuminuria in 32.6 percent of patients. Renal function was impaired in 44.2 percent of patients.

Various causative organisms were identified. The frequency and percentages of the etiologic organisms are shown in Table 7. The majority of cases were caused by streptococci (48.8 percent) and S. Aureus (20.9 percent). Enterococci were identified in 2 patients (4.7 percent). Mixed infection with E. coil and E.fecalis were identified in 1 patient (2.3 percent) and ten patients (23.3 percent) had negative blood cultures.

Twenty - three patients (53.3 percent) had complications. Heart failure was the most common (23.3 percent), followed by cerebral infarction (16.3 percent). Other complications are shown in Table 8.

Eight patients (18.6 percent) died in hospital. The causes of death were congestive heart failure in 6 patients, stroke in 1 patient and pneumonia in 1 patient.

Discussion

In this study, the criteria for diagnosis was adapted from the new criteria for diagnosis of infective endocarditis, utilization of specific echocardiographic findings[11] proposed by Durack D.T., Lukes A.S. and Bright D.K. : With this strict case definitions, 16 patients were excluded. These patients could be classified as culture negative endocarditis by other investigators.

The disease was more prevalent in male with male to female ratio of 1.4 : 1 This finding is

Table 7 Microbiology of infective endocarditis

Organism	No of Patients (Percent)
Streptococci	21 (48.8)
S. Aureus	9 (20.9)
Enterococci	2 (4.7)
Polymicrobial	1 (2.3)
Negative cultures	10 (23.3)

Table 8 Complications of infective endocarditis

Complications	No of Patients (Percent)
Heart Failure	10 (23.3)
Cerebral infarction	7 (16.3)
Third degree AV block	2 (4.7)
Pneumonia	2 (4.7)
Brain abscess	1 (2.3)
Meningitis	1 (2.3)

consistent with other studies.[8–10, 12–13] The age range was 15 – 80 years with high incidence in the older group aged 46 – 75 years. The mean age was 53.4 years. This finding is similar to several reports from the developed countries, however the mean age of the patients in this study is higher than recent Thai studies[9–10] in which high prevalence of underlying rheumatic valvular disease and intravenous drug abusers.

As in other reports,[7–10, 12–14] most patients who develop infective endocarditis had preexisting heart conditions (81.4 percent). The clinical manifestations were protean. The patients almost always had fever and about three – fourths had heart murmur. It should be noted that 13.9 percent of patients had hemiparesis due to cerebral infarction at initial presentation. The overall patterns of clinical manifestation in this study were not significantly different from previous reports,[8–10, 12–15] except the low prevalence of mucocutaneous manifestations and retinal lesions. These may be more accurate by careful physical examination.

Leucocytosis was found in only two – thirds of patients. It is an unreliable manifestation of infective endocarditis. Urinalysis showed microscopic hematuria and microalbuminuria in 41 percent and 32 percent of cases respectively. These are among the useful initial laboratory findings leading to the diagnosis of infective endocarditis.

Mitral valve involvement was the most common (55.8 percent) followed by aortic valve (27.9 percent) and tricuspid valve (16.3 percent). This finding is also consistent with other studies[8–10, 12–14] in which the left side of heart was involved much more often than the right because of high pressure upon it.

Blood cultures were positive in 76.6 percent of patients. This finding is comparable to the 69 percent rate reported in recent Thai study.[10] Nonetheless it was 95 percent rate reported in the classic study by Werner.[15] This discrepancy could result from several factors, including lack of an explicit definition of infective endocarditis in the study by Werner, pervious antibiotic treatment, difficult – culture organism and improper blood culture techniques. The etiologic organisms in this study is similar to other studies[8–10, 12, 14] in which the two most common organisms were Streptococci (48.8 percent) and S. aureus (20.9 percent).

Finally, consistent with other studies,[8–10,12,14–17] this study found that cardiovascular complications were the most common. Congestive heart failure complicated in 23.3 percent of patients. The overall case fatality rate of 20.9 percent is comparable to the rate reported in several studies.[8–10, 12] The main causes of death were congestive heart failure. The fatal cases tended to be older and had aortic or mitral valve disease.

This study was carried out at Prapokklao Hospital, Chantaburi province, Thailand, a regional hospital with both primary and referral patient populations. Some data obtained from this study were different from previous studies of university hospital in Thailand and other contries. These data may be helpful for decision making in management of patients with infective endocarditis in Thailand.

Summary

During October 1997 to September 2003, There were 43 adult cases of infective endocarditis admitted to Prapokklao Hospital. The male to female ratio was 1.4 : 1 and the mean age was 53.4 years. The underlying cardiac lesions were identified in 81.4 percent of patients. Streptococci were the most common causative agents. Most of patients had fever and about three - fourths had heart murmur on admission. Complete blood count showed leucocytosis in only two - thirds of patients. Congestive heart failure was the most common complication. The overall case fatality rate was 18.6 percent. The causes of death were heart failure, cerebral infarction and pneumonia.

Abstract

Objective

This study aims to examine the patients diagnosed with infective endocarditis, in terms of age, sex, predisposing cardiac diseases, causative organisms, clinical manifestations, laboratory findings, complications and the results of treatment.

Materials and Methods

Retrospective descriptive study of the medical records with diagnosis of infective endocarditis (ICD 10 CODE I33.0) from the department of medicine of Prapokklao Hospital in 6 years period (October 1997 to September 2003)

Results and conclusion

During October 1997 to September 2003, there were 43 adult cases of native valve infective endocarditis admitted to Prapokklao Hospital. The male to female ratio was 1.4 : 1 and the mean age was 53.4 years. Eighty-one percent of patients had pre-existing cardiac lesions. Streptococci were the most common causative agents (48.8 percent). Physical examination on the admission revealed fever and heart murmur in 93 percent and 76.7 percent of patients respectively. Heart failure was the most common complication (23.3 percent). The overall case fatality rate was 18.6 percent. The causes of death were congestive heart failure, cerebral infarction and pneumonia.

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