Right sided endocarditis: clinical and echocardiographic characteristics

Lejko-Zupanc T, Kozelj M, Kranjec I, Pikelj F

Homepage:

www.kup.at/jcbc

Online Data Base Search for Authors and Keywords
Right-sided endocarditis: clinical and echocardiographic characteristics

T. Lejko-Zupanc, M. Kozelj1, I. Kranjec1, F. Pikelj

Clinical and echocardiographic characteristics of patients treated for right-sided endocarditis are presented. Of 205 patients with infective endocarditis, 13 had involvement of the right heart structures. The predisposing factors for right-sided infective endocarditis in our group of patients were either severe debilitating disease (4 patients), or congenital heart disease (2 patients). In the majority of patients the disease was linked to invasive medical procedures such as central intravenous lines, pace-maker and an abortion in one case. None of the patients was an intravenous drug user. The tricuspid valve was affected in eight patients and pulmonary valve in three. In one patient, the endocardium at the right side of the ventricular septal defect was involved. One patient had a pace-maker electrode infection. Pulmonary embolism was the major complication of the disease. A trans-thoracic echocardiogram confirmed the diagnosis in all patients with tricuspid valve infective endocarditis, while vegetations were present in only one patient with pulmonary valve infective endocarditis. Four patients died. Right-sided infective endocarditis in non drug addicts is a severe disease with high mortality rate, and should be suspected in patients with pulmonary embolism and signs of infective endocarditis, especially in those with a predisposing condition, even if they are not intravenous drug addicts. J Clin Basic Cardiol 1999; 2: 81–4.

Keywords: infective endocarditis, right heart, echocardiography

Although right-sided infective endocarditis (IE) is mainly a disease of intravenous drug abusers, it can occur also in non-drug addicts [1]. Regional differences seem to exist in the clinical spectrum of the disease [2]. In addition to intravenous drug abuse, several disease states, such as alcoholism, immunodeficiency states, permanent pacemakers, central venous lines and some congenital heart diseases predispose to this condition [3–5]. The incidence of right-sided IE ranges from 5 to 10 per cent in different series [6, 7]. The aim of the study was to study clinical and echocardiographic characteristics of right-sided IE in our patients and compare them with those in previously published series.

Patients and Methods

Over a 12-year period, 205 patients were treated for IE in the University Medical Centre Ljubljana. Thirteen patients had a documented involvement of the right side of the heart. The diagnosis of IE was based on the Duke Endocarditis Service criteria, and the patients meeting these criteria were classified as definite, probable and possible IE [9]. Infection involving the right side of the heart, including the pace-maker’s electrode in the right cardiac chambers, was defined as isolated right-sided IE. Patients with concomitant involvement of the aortic and/or mitral valve were excluded from the study.

Our patients were studied for the presence of preexisting heart disease or anomaly, predisposing condition or port of entry for the causative microorganism, clinical course and outcome of the disease, and echocardiographic characteristics. Blood cultures were drawn according to the recommendations of Duke Endocarditis Service [8] and processed at the Institute of Microbiology of the Medical Faculty Ljubljana. In every case the antibiotic treatment was not instituted before the blood cultures were drawn. Both patients with negative blood cultures received multiple courses of antibiotics prior to admission to our department. In only one patient was the diagnosis of suspected infective endocarditis entertained before the results of the blood cultures or echocardiography were obtained and empirical treatment was started immediately. In other patients initial broad spectrum antibiotic coverage was started. No serological examinations were done in patients with negative blood cultures.

Complete echocardiographic examinations (M-mode, two-dimensional echocardiography, Colour flow Doppler and CW Doppler) were performed through a transthoracic (TEE) or transesophageal (TTE) approach using standard techniques and the VingMed 750 echocardiographic equipment. We examined the whole heart, not only the right chambers. We considered positive echocardiogram for IE with the evidence of endocardial involvement:

- Vegetation: oscillating intracardiac mass, on valve or supporting structures, or in the path of regurgitant jets in the absence of an alternative anatomical explanation
- Abscess
- A new valvular regurgitation [8]

TEE was performed in only two patients. We used a multiplane transesophageal probe. The patients did not receive extra intravenous medication before TEE procedure. In patients who died an autopsy was performed.

Results

In our series of 13 patients with right-sided IE, there were eight men and five women, ranging in age from 19 to 77 years, (mean age 48 yrs.). Clinical data are presented in Table 1. Eleven patients had definite and two possible IE by Duke Endocarditis Service criteria for IE. The tricuspid valve was affected in eight patients, and the pulmonary valve in three. In two patients, IE occurred on the valve previously damaged by congenital pulmonary stenosis or tricuspid prolapse, in one patient on the pace-maker electrode, and in one at the parietal endocardium of the right ventricle at the ventricular septum defect (VSD). Other coexisting cardiac malformations included ASD, patent foramen ovale, and Chiari’s network.
Four patients had a history of an invasive procedure, such as artificial abortion, or placement of central venous line, intravenous device, or permanent pace-maker. Four patients suffered from a debilitating or malignant disease (decompensated ethylc cirrhosis in two patients, essential thrombocytopenia in one patient and carcinoma of the larynx in one patient). One patient presented with no history of preexisting heart disease or predisposing factor for IE. None of the patients gave a history of intravenous drug use.

Various microorganisms were isolated from the blood: S. aureus in three cases, various types of streptococci in six cases, E. faecalis in one case, S. epidermidis in one case, and C. albicans in one case. Blood cultures were negative in two patients.

Medical treatment consisted of long term (> 2 weeks), iv. high dose sensitivity-proven antibiotics. In patients who survived, the duration of treatment was usually 4 weeks.

Pulmonary embolisms, which occurred in nine of the 13 patients, were the main complication of the disease. In most patients, chest X-rays were not characteristic of pulmonary infarction, but showed various infiltrates in the lungs. Other complications included septic sacroileitis, multiple organ failure, paravalvular abscess, septic shock and obstruction of the tricuspid orifice by large vegetation.

In one patient urgent surgical intervention was required because of obstruction of the tricuspid valve by large vegetation.

The patient with pace-maker electrode infection was treated early in course of the disease by surgical removal of the electrode. We did not notice any oscillating masses at the entrance of the superior Vena cava into the right atrium. The surgery confirmed the vegetation were attached only on the pace-maker electrode in the right atrium. The patient with VSD was operated a few months after antimicrobial treatment of IE.

Four patients (30.7 %) died; at autopsy, clinical diagnosis was confirmed, and right-sided IE was identified as a direct cause of death. Patient 8 died of cardiac tamponade as a consequence of ruptured paravalvlar abscess, patient 9 succumbed to intractable congestive heart failure and patient 11 died postoperatively due to decompensation of hepatic cirrhosis. Although in patient 9 the operation was considered, the operation was not performed due to rapid deterioration and sudden death of the patient. In patient 12, septic shock due to MRSA superinfection rather than IE was identified as a direct cause of death (Table 1).

In all patients but two, echocardiograms were compatible with the major echocardiographic criteria, including an oscillating intracardial mass (Figure 1) and a new valvular regurgitation (Table 2). In two patients, the echocardiogram met the minor criteria for IE, including a changed Doppler signal and increased transpulmonary pressure gradient. As demonstrated by the follow-up echocardiograms, the vegetations decreased in size and became brighter in all survivors treated medically. In eight patients, the vegetation was associated with a new tricuspid regurgitation, and in two, with pulmonary regurgitation. In two patients with tricuspid valve IE, Chiaris’s network was seen in the right atrium.

Discussion

The clinical course of right-sided IE in our series differed in several relations from that reported in other series from North America and Europe. None of our patients was an intravenous drug user, which is not surprising since intravenous drug abuse does not yet seem to constitute a major health risk in this country. The precise number of intravenous drug abusers in Slovenia is not known, but according to some unofficial estimates, it should be from 5,000 to 10,000. They use clean hypodermic needles because they are readily available in pharmacies at very low price. Although some studies consider in-
Characteristics of right-sided endocarditis

Table 2. Echocardiographic characteristics of patients with right-sided infective endocarditis

<table>
<thead>
<tr>
<th>pt</th>
<th>site of IE</th>
<th>echocardiographic findings</th>
<th>major or minor</th>
<th>echo criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TV</td>
<td>vegetation 1 cm, new TR</td>
<td>major</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>TV</td>
<td>asymmetric jet of TR</td>
<td>minor</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>TV</td>
<td>vegetation 0.5 x 0.7 cm, new TR</td>
<td>major</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>TV</td>
<td>vegetation 1.5 cm, new TR</td>
<td>major</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>TV</td>
<td>vegetation 0.5 cm, TR</td>
<td>major</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>TV</td>
<td>vegetation 2.1 cm, new TR</td>
<td>major</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>PV</td>
<td>PR</td>
<td>minor</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>PV</td>
<td>increasing pulmonary velocity</td>
<td>minor</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>PV</td>
<td>vegetation 3 cm</td>
<td>major</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>PM electrode</td>
<td>vegetation 3.1 cm on PM electrode</td>
<td>major</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>TV</td>
<td>vegetation 2 x 3 cm, new TR, tric. obstr.</td>
<td>major</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>TV</td>
<td>vegetation 1.5 x 3.0 cm, new TR</td>
<td>major</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>VSD</td>
<td>vegetation at VSD</td>
<td>major</td>
<td></td>
</tr>
</tbody>
</table>

TV = tricuspid valve, PV = pulmonary valve, TR = tricuspid regurgitation, PR = pulmonary valve regurgitation, PM = pace-maker

References


Mitteilungen aus der Redaktion

Besuchen Sie unsere
zeitschriftenübergreifende Datenbank

☑ Bilddatenbank   ☑ Artikeldatenbank   ☑ Fallberichte

e-Journal-Abo
Beziehen Sie die elektronischen Ausgaben dieser Zeitschrift hier.
Die Lieferung umfasst 4–5 Ausgaben pro Jahr zzgl. allfälliger Sonderhefte.
Unsere e-Journale stehen als PDF-Datei zur Verfügung und sind auf den meisten der marktüblichen e-Book-Readern, Tablets sowie auf iPad funktionsfähig.

☑ Bestellung e-Journal-Abo

Haftungsausschluss

Bitte beachten Sie auch diese Seiten:

Impressum   Disclaimers & Copyright   Datenschutzerklärung