Infective Endocarditis in a Tertiary-Center in Jerusalem, an 8-Year Prospective Survey: Effects of Surgery on Mortality

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Revised Abstract

Background: Use of surgery for the treatment of IE as related to surgical indications and operative risk for mortality has not been well defined. Although cardiac surgery can be life-saving, it also carries significant risk for the patient. Our aim was to evaluate the effect of surgery on in-hospital and six-month post diagnosis survival.

Methods: A prospective observational cohort study of consecutive adult patients with definite IE according to the modified Duke criteria. Data were collected from January 2009 through June 2016 following a predefined case report form designed by the International Collaboration on Endocarditis Prospective Cohort study group. Indications for surgery were categorized following current guidelines.

Results: Among 165 IE episodes, 104 (63%) were community acquired. 93 (56%) involved native valves. The predominant causative microorganism was Staphylococcus aureus (n=56). Mean Charlson comorbidity score was 4.4 (median 4.0, SD 3.1). Overall in-hospital mortality was 20.6% (27/133). 84 of 165 patients had no indication for surgery, 44 underwent surgery and 37 who had an indication were treated conservatively due to a contraindication for surgery. In-hospital and 6-month mortality rates among the three groups were: 14.3%, 6.8%, 51.4% and 31%, 22%, 61.1%, respectively (among the conservative treatment groups, P<0.001). Overall six-month mortality rates were significantly lower among the surgically treated group compared with the conservatively treated group (22% vs. 40.4%, P=0.048), whereas mortality rates among primary conservative and surgically-treated patients were similar. In-hospital mortality rates among groups of patients refused operation because of poor risk regardless of surgery, patients who had a stroke, and those with a soft contraindication were 75%, 33% and 29%, respectively, P<0.001. Among the patients who underwent surgery, of the 39 patients with a strong indication for surgery, three died during hospitalization whereas none of the five patients with a weaker indication died.

Conclusion: Compared with our previous cohort, we observed a lowered mortality rate. Comorbidities may explain the higher mortality rate than in contemporary population-based studies. Surgery was associated with increased survival. Careful evaluation and assessment of contraindications to surgery is warranted.

Introduction

The indication for surgical treatment is not questioned in patients with infective endocarditis who develop heart failure or have uncontrolled infections related to extension to the paravalvular tissue; however, its role in other cases, including severe valvular damage without HF, infection by certain pathogens, large vegetations and prosthetic valve infection, is less certain. Moreover, due to high operative risk, not all patients who need surgery undergo the procedure. We previously found in our hospital that only a third of the patients who had an indication for surgery were operated upon, and nearly half of all deaths were in patients who had a contraindication to surgery. Our aim was to evaluate the effect of surgery on survival in a larger cohort.

Methods

Patient selection. Hadassah-hospital is a 1,105-bed, tertiary-care teaching hospital, serving a population of ~ 800,000. Adult patients who were hospitalized from January, 2009, through June 2016, were included in the analysis if they met the modified Duke criteria for definite IE.

Data collection. Data were collected using the predefined case report form designed by the International Collaboration on Endocarditis - Prospective Cohort Study (ICE-PCS) survey. 30-month follow-up data were obtained using medical records and national death indices.

Results

165 episodes of definite IE, representing an incidence-rate of 2.62 cases /100000 person. 5 fulfilled pathological criteria, 49 fulfilled major criteria and 16 fulfilled major and 3 minor criteria. The most prevalent pathogen isolated in the study was Staphylococcus aureus (33.9%).

<table>
<thead>
<tr>
<th>Variable</th>
<th>All patients</th>
<th>Variable</th>
<th>All patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>165</td>
<td>Source of acquisition</td>
<td></td>
</tr>
<tr>
<td>M:F</td>
<td>2:0.5:1</td>
<td>community</td>
<td>104 (63%)</td>
</tr>
<tr>
<td>age (mean)</td>
<td>62.9±16.7</td>
<td>HCA</td>
<td>57 (35%)</td>
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<tr>
<td>DM</td>
<td>55 (33%)</td>
<td>IE focus</td>
<td></td>
</tr>
<tr>
<td>Cancer</td>
<td>28 (17%)</td>
<td>NVE</td>
<td>93 (56%)</td>
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<tr>
<td>previous CHF</td>
<td>66 (41%)</td>
<td>PVE</td>
<td>31 (19%)</td>
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<tr>
<td>intra-cardiac device</td>
<td>69 (42%)</td>
<td>pacemaker</td>
<td>13 (8%)</td>
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<tr>
<td>PV</td>
<td>47 (29%)</td>
<td>unknown</td>
<td>26 (16%)</td>
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<tr>
<td>previous IE</td>
<td>8 (5%)</td>
<td>combination</td>
<td>2 (1%)</td>
</tr>
</tbody>
</table>

Pathogens

- S. aureus - 34%
- Staphylococcus aureus
- Streptococci spp.
- Enterococci spp.
- Coagulase Negative Staphylococcus
- other/culture negative
- Candida spp.

Conclusions

- The case fatality rate, higher than in recent publications, is probably due to older population age, higher rates of diabetes mellitus and congestive heart failure and healthcare associated infective endocarditis.
- when an indication for surgery arises, without concomitant contraindication, one should pursue surgical treatment to promote optimal outcome and reduce mortality risk.
- Variables found to be statistically significant in multivariate analysis in both censoring time points, may provide model predicting mortality.

References


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