Predictors of Moderate Ischemic Mitral Regurgitation Improvement After Off-pump Coronary Artery Bypass

Xiaotian Sun1, Jiechun Huang1, Meng Shi1, Guoqian Huang2, Liewen Pang1, Yiqing Wang1

1. Department of Cardiothoracic surgery, Huashan Hospital of Fudan University, Shanghai, P. R. China
2. Department of Echocardiography, Huashan Hospital of Fudan University, Shanghai, P. R. China

Introduction

So far, the optimal strategy for moderate ischemic mitral regurgitation (IMR) is still controversial. It is of much concern whether moderate IMR can be reduced after CABG alone. To date, identified predictors of IMR improvement after CABG were scattered. As an important mechanism of IMR, LV regional remodeling is especially barely studied, and relationship between regional remodeling and IMR changes after revascularization has not been identified either.

Purpose

The aim of this study was to identify the predictors of IMR improvement after OPCAB focusing on regional remodeling.

Methods

A prospective study was performed among 109 patients (66.6 ± 8.6 y, 34.6% female) with prior myocardial infarction and moderate IMR undergoing OPCAB surgery. Preoperative and follow-up clinical characteristics and echocardiography data were analyzed, focusing on left ventricular global and regional remodeling and function. Patients were grouped by postoperative IMR at 1 year: Improved Group: with no or mild IMR and Failure Group: with moderate or severe IMR. Data were compared between the two groups to explore the predictors of improvement of IMR after OPCAB. Postoperative survival condition was followed up within one year, and Kaplan–Meier survival curve was drawn.

Results

Five patients were excluded for dying within 1 year. At the 1-year follow up, there were 55 patients in Improved Group and 49 in Failure Group. Before surgery, Improved Group had smaller left ventricular end-systolic volume, greater left ventricular ejection fraction, greater posterior-inferior volume ratio and earlier operation timing after infarction than Failure Group. As shown in Table 1, Posterior-inferior volume ratio (P < 0.001), ejection fraction (P = 0.003) and duration between infarction and operation (P < 0.001) were independent predictors of preoperative moderate IMR improvement.

Conclusion

In selected patients, preoperative moderate IMR could be relieved by OPCAB. Greater ejection fraction and posterior-inferior volume ratio, as well as early operation timing after infarction may predict the improvement of moderate IMR after OPCAB.

Table 1: Predictors of IMR improvement by binary logistic regression analysis

<table>
<thead>
<tr>
<th>Determinants</th>
<th>Coefficient and standard error</th>
<th>Odds Ratio</th>
<th>95% Confidence Interval</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ejection fraction</td>
<td>0.192 ± 0.065</td>
<td>1.212</td>
<td>1.066–1.376</td>
<td>&lt;0.001</td>
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<tr>
<td>Posterior-inferior volume ratio</td>
<td>0.596 ± 0.136</td>
<td>1.815</td>
<td>1.391–2.369</td>
<td>&lt;0.001</td>
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<tr>
<td>Duration between infarction and operation</td>
<td>0.651 ± 0.178</td>
<td>0.521</td>
<td>0.368–0.740</td>
<td>&lt;0.001</td>
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