FUNDING

The research reported in this publication was supported by the Sociedad Catalana de Cardiología (Catalan Society of Cardiology) with the Servier 2012 grant.

CONFLICTS OF INTEREST

J. Comín-Colet was a member of the executive committees of the FAIR-HF and CONFIRM-HF trials (both sponsored by Vifor Pharma Ltd), and has received honoraria for conferences from Vifor Pharma.

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REFERENCES


Circulatory Support With Extracorporeal Membrane Oxygenation System as a Bridge to Heart Transplantation in Complex Postinfarction Ventricular Septal Rupture

Asistencia circulatoria con oxigenador extracorpóreo de membrana como puente a trasplante cardíaco en rotura septal ventricular compleja

To the Editor,

The optimal timing for surgery to treat mechanical complications of acute myocardial infarction is still under debate. 1 Postinfarction ventricular septal defect (VSD) is an infrequent complication associated with high mortality. The actual incidence of this condition ranges from 0.17% to 0.31%, with a mortality of 94% with medical treatment and 42.5% with surgery. 1 The variables associated with greater mortality are age, need for early surgery, size > 12 mm, and posterior site. 2

Recently, the potential use of circulatory support systems as a bridge to definitive correction of postinfarction VSD or even as a bridge to heart transplantation has been reported. 3

This article presents the first reported experience in Spain of extracorporeal membrane oxygenation (ECMO) as a bridge to heart transplantation in a patient with 2 mechanical complications of myocardial infarction: a large posterior VSD and left ventricular pseudoaneurysm.

The patient was a 62-year-old man with hypertension and type 2 diabetes mellitus. He presented with a 14-hour history of oppressive chest pain.

The electrocardiogram showed Q waves with 2-mm ST elevation in the lower leads and 1.5-mm ST depression in the lateral leads. Blood pressure was 110/50 mmHg and he had sinus tachycardia at 120 bpm. On physical examination, a pansystolic III/VI murmur was noted at the left sternal border. Emergent coronary angiography was performed using the right radial artery approach. This showed involvement of the right coronary system with complete occlusion of the mid segment of the right coronary artery (Figure 1A). Left ventricu-
aggressive and avoids the effects of suction and flow loss. Advantages of this device associated with use of balloon counterpulsation include decreased myocardial oxygen requirements, which in the present case could have helped prevent an increase in the size of the infarction and VSD. In addition, a lower pressure at the ventricular wall could have reduced the risk of a localized rupture becoming a tear. Finally, the device can buy time until transplantation or a less risky repair if this were possible. Other possibly therapeutic options include the Impella ventricular assist device or a total artificial heart (Cardiowest).1

Our case, although subject to the limitations inherent in a single observation, indicates that the use of circulatory support in the form of an ECMO device as a bridge to transplantation is an alternative to surgical repair in cases of large postinfarction VSD or when 2 or more mechanical complications are present after infarction. Further study is needed to analyze the specifics of the outcomes of both strategies.

SUPPLEMENTARY MATERIAL

Supplementary material associated with this article can be found in the online version available at doi:10.1016/j.rec.2016.02.015.

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Available online 22 April 2016

REFERENCES


Figure 1. A: Right coronary artery occluded in the mid segment (arrow). B: Ventriculogram; left ventricle (single arrow), pseudoaneurysm (double arrow), and right ventricle (triple arrow).

Figure 2. A: Echocardiogram showing the ventricular septal defect (white arrow) and pseudoaneurysm (black arrow). B: Explanted heart; the right ventricle is open and tweezers introduced through the aortic valve pass through a large ventricular septal defect in the posterior part of the septum.
Real-world Data on the Efficacy of Vernakalant for Pharmacological Cardioversion in Patients With Recent-onset Atrial Fibrillation

To the Editor,

Atrial fibrillation (AF) is the most common cardiac arrhythmia and the reason for many emergency department (ED) visits. The treatment of AF in the ED is a challenge due to its rapid and self-limiting nature, often requiring emergency hospitalization. We present our experience with the first 52 consecutive administrations of vernakalant between January 2014 and December 2015. We collected information on risk factors, the presence of structural heart disease, duration of AF, time from start of infusion to conversion to SR, adverse effects, and length of stay in the ED.

In total, 47 patients were included in the study. Of these patients, 5 received vernakalant during 2 ED visits, making a total of 52 treatments. Table 1 shows the patients’ baseline characteristics. Conversion was achieved in 45 patients (86%) and a second vernakalant infusion was needed in only 8 patients. In addition, the time to conversion to SR was rapid (mean, 12.5 minutes; range, 1-115; median, 8), which led to shorter stays in the ED (mean, 5.3 [2-18] hours). Five patients experienced mild adverse events: 1 patient had sustained ventricular tachycardia (vernakalant infusion was maintained with subsequent conversion to SR); 2 patients had self-limiting cough and nausea; 1 patient had dysgeusia; and 1 patient had self-limiting atrial flutter. Regarding its use with other antiarrhythmic agents, conversion was attempted with amiodarone in 1 patient, without success, and at 4 hours an infusion of vernakalant achieved conversion within a few minutes. Another patient received background therapy with flecainide to which vernakalant was added without incident. Vernakalant was used more frequently with beta-blockers (10 patients) than with dihydropyridine calcium antagonists (1 patient).

This study demonstrates the efficacy of vernakalant in achieving rapid and safe conversion to SR. Only 5 patients experienced mild transient adverse effects and the mean conversion time was 12.5 minutes, which allowed patients to be discharged from the ED in just over 5 hours.

The results of our series are better than those of pivotal trials of vernakalant, which together show an efficacy of 51% although, as in our series, conversion was rapid and safe. Nevertheless, the results of its use in clinical practice are very similar to ours. Demonstrated efficacy rates of 86% to 93% and of 66% have been published by Conde et al. and Mochalina et al., respectively. The analysis of predictors of success showed that elevated heart rate was associated with the highest success rates. However, in line with the findings of Costabel et al., the presence of structural heart disease was nonsignificantly associated with low success rates. This finding may explain why the results of registries are better than those of pivotal trials, given that the proportion of patients with structural heart disease is lower in real-world registries.

The main limitations of this study are its single-center design and its small sample size, which may have decreased its statistical power to identify predictors of successful conversion. In addition, the patients were relatively healthy, had a low prevalence of structural heart disease, and had a first AF episode. In contrast, the percentage of patients with a first AF episode was lower in clinical trials and other published real-world studies.

In conclusion, vernakalant is an efficacious, rapidly acting, and safe drug for conversion of AF to SR. The main limitations to its

Table 1
Baseline Characteristics of the 47 Patients

<table>
<thead>
<tr>
<th>Variable</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, y</td>
<td>66 (24-89)</td>
</tr>
<tr>
<td>Male sex</td>
<td>23 (49)</td>
</tr>
<tr>
<td>Hypertension</td>
<td>28 (60)</td>
</tr>
<tr>
<td>DM</td>
<td>3 (6)</td>
</tr>
<tr>
<td>Structural heart disease</td>
<td>8 (17)</td>
</tr>
<tr>
<td>IHD</td>
<td>3 (6)</td>
</tr>
<tr>
<td>Heart failure</td>
<td>1 (2)</td>
</tr>
<tr>
<td>Rheumatic mitral valve disease</td>
<td>3 (6)</td>
</tr>
<tr>
<td>Hypertrophic cardiomyopathy</td>
<td>1 (2)</td>
</tr>
<tr>
<td>CHA2DS2-VASc score</td>
<td>2.3 (0-6)</td>
</tr>
<tr>
<td>First AF episode</td>
<td>37 (79)</td>
</tr>
<tr>
<td>Duration, h</td>
<td>8.2 [1-118; 4]</td>
</tr>
<tr>
<td>Heart rate during AF, bpm</td>
<td>133 (81-176)</td>
</tr>
</tbody>
</table>

AF, atrial fibrillation; DM, diabetes mellitus; IHD, ischemic heart disease. Data are expressed as no. (%) or mean [range; median].

Table 2
Independent Predictors of Conversion to Sinus Rhythm Using Vernakalant (Binary Logistic Regression)

<table>
<thead>
<tr>
<th>Variable</th>
<th>OR (95%CI)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>0.492 (0.058-4.168)</td>
<td>.516</td>
</tr>
<tr>
<td>History of heart disease</td>
<td>0.163 (0.021-1.274)</td>
<td>.084</td>
</tr>
<tr>
<td>Heart rate during AF</td>
<td>1.056 (1.004-1.111)</td>
<td>.034</td>
</tr>
<tr>
<td>Duration of AF</td>
<td>0.988 (0.937-1.042)</td>
<td>.657</td>
</tr>
<tr>
<td>Age</td>
<td>1.018 (0.945-1.097)</td>
<td>.642</td>
</tr>
</tbody>
</table>

95%CI, 95% confidence interval; AF, atrial fibrillation; OR, odds ratio.