Case Report

Acute Fulminant Myocarditis Successfully Bridged to Recovery with Left Ventricular Assist Device and Complicated by Flail Mitral Valve

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Received 2015 April 2015; Accepted 14 October 2015

Abstract

Acute fulminant myocarditis is a life-threatening inflammatory disease of the myocardium characterized by the rapid deterioration of the hemodynamic status of the affected individual. With prompt recognition and appropriate management, complete recovery of ventricular function is likely within a few weeks. We introduce a 28-year-old man with acute fulminant myocarditis, who experienced circulatory collapse following acute angina and dyspnea. The patient had high troponin levels with low ejection fraction and normal coronary arteries. He was successfully bridged to recovery with a left ventricular assist device but was complicated by flail mitral valve. Perioperative myocardial biopsy was also compatible with myocarditis. At 4 months’ follow-up, the patient was stable with functional capacity I according to the New York Heart Association’s classification. A possible mechanism for this very rare complication is the rupture of the chordal structure secondary to the fragility of an inflamed subvalvular apparatus stretched by a recovered ventricle.

J Teh Univ Heart Ctr 2016;11(1):38-40


Keywords: Myocarditis • Heart-assist devices • Mitral valve

Introduction

Acute fulminant myocarditis is a grave disease which may result in circulatory collapse and death in a short period of time unless it is successfully bridged to recovery or transplantation. Cardiogenic shock and fatal arrhythmias usually necessitate mechanical circulatory support. Favorable long-term outcomes may be achieved in fulminant myocarditis if there is appropriate management.¹ However, unpredicted complications may also be encountered in survivors. Here, we present a case of acute fulminant myocarditis, which was successfully bridged to recovery with a left ventricular assist device (LVAD) but complicated by flail mitral valve.

Case Report

A 28-year-old man without previous cardiovascular
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function and patient survival. With prompt recognition and appropriate management, complete recovery of ventricular function is likely within a few weeks. Nonetheless, our patient’s recovery was complicated by flail mitral valve. This complication may be secondary to either implantation of a ventricular assist device or myocarditis itself. Since our implantation technique is via the aorta and left atrium, a direct interaction between the subvalvular apparatus and the cannula is not expected - reducing the likelihood of a complication due to the assist device. A second possible speculation for this complication is the rupture of the chordal structure secondary to the fragility of an inflamed subvalvular apparatus stretched by a recovered ventricle. Also, mitral insufficiency may have been present during the period when our patient was followed up with the LVAD but we failed to recognize the mitral insufficiency as significant because of the unloading effect of the LVAD. This is a very rare complication, and there are only a few reports concerning this complication in the literature. However, in the era of assist devices, this complication may be encountered more frequently with the increase in the number of the survivors of fulminant myocarditis.

**Conclusion**

Acute fulminant myocarditis is a rapidly progressing, life-threatening disease. Proper treatment may confer favorable long-term outcomes. A good awareness of treatment options and possible complications would increase the patient’s chance of survival.

**References**