



Right Ventricular Failure and Aortic Regurgitation

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Introduction

With the increasing use of left ventricular assist device (LVAD) therapy the clinical scenario of late right ventricular failure (RVF) is becoming more and more evident. Onset of aortic regurgitation (AR) is another problem of long-term LVAD therapy. We present a case of successful treatment of severe RVF by eliminating the aortic regurgitation through a transcatheter aortic valve implantation (TAVI) procedure.

Case Report

A 72-year-old patient presented in our LVAD outpatient department with dyspnea of NYHA grade IV, peripheral edema and ascites. He had been on LVAD therapy with a HeartWare device for 2.5 years. The echocardiogram showed a dilated left ventricle (LVEDD 68 mm) with moderate aortic and mitral regurgitation, and a dilated right ventricle (RVOT EDD 63 mm) with severe tricuspid regurgitation. The patient was admitted and dobutamine infusion was started. During the hospital stay the left ventricle dilated further to 79 mm despite an increase of the dobutamine infusion rate to finally 5.34 µg/kg/min. The moderate to severe AR was considered to be causing RVF and a Sapien 3 29 mm valve was successfully implanted transfemorally. The patient was weaned from inotropic support on the 10th postoperative day. The echocardiogram showed regression of the right ventricular dilatation with a reduction of tricuspid and mitral regurgitation to trace. The RVOT diameter decreased from 63 to 55 mm. The patient lost 6 kg by negative fluid balance in the next 4 postoperative weeks. He started physiotherapy and was transferred for rehabilitation.

Recently a further LVAD patient with right ventricular failure and aortic regurgitation was successfully treated with a TAVI procedure, with marked improvement of his right ventricular function.

Summary

In the present case the severe RVF was caused by severe AR. The diagnosis was made by echocardiography showing enlargement of the left and right ventricles with severe regurgitation of the atrioventricular valves. Elimination of the AR led to immediate improvement of right ventricular function and normalization of ventricular dimensions and clinical situation.

In conclusion, AR should be closely monitored in patients on LVAD and, if present, aggressively treated to prevent deterioration of right ventricular function.

Relevant Financial Relationship Disclosure Statement:

I will discuss off label use of the Sapien 3 in aortic regurgitation.

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