

SUCCESSFUL PERCUTANEOUS SEPTAL ALCOHOL ABLATION AFTER SURGICAL MYECTOMY

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ABSTRACT

Hypertrophic obstructive cardiomyopathy (HOCM) is a primary, usually familial and genetically fixed myocardial hypertrophy, with dynamic left ventricular outflow tract obstruction. An alternative to surgical myectomy in the treatment of severe, drug refractory, HOCM is percutaneous transluminal septal myocardial ablation (PTSMA). We report a case of 24 year old female patient who had the first septal myectomy but because of progression of her disease, the percutaneous treatment of hypertrophic obstructive cardiomyopathy was performed. A year after the PTSMA the patient was without of symptoms.

KEY WORDS: Hypertrophic obstructive cardiomyopathy, percutaneous transluminal septal myocardial ablation

INTRODUCTION

Hypertrophic obstructive cardiomyopathy (HOCM) is a primary, usually familial and genetically fixed myocardial hypertrophy, with dynamic left ventricular outflow tract obstruction (1). Several therapeutic approaches to the treatment of HOCM can be used: a medical therapy (negative inotropic substances as beta-adrenergic blocking agents or calcium antagonist), surgical myectomy or percutaneous transluminal septal myocardial ablation (PTSMA). Herein we present a patient with HOCM who had successful PTSMA after recurrence of symptoms after initially successful surgical septal myectomy.

CASE REPORT

A 24 year old female with recurrent episodes of syncope and with a family history of epilepsy was admitted to the neurological clinic. After a neurological work-up, epileptic seizures were suspected and the patient was treated with antiepileptic therapy. After several days of hospitalization her clinical condition worsened, presenting with increasing fatigue and dyspnea (NYHA - New York Heart Association functional class IV). She was transferred to the cardiac intensive care unit. On examination, she had a loud systolic ejection murmur at

rest. An echocardiogram showed global left ventricular hypertrophy without abnormality in any segmental myocardial movements. The myocardial thickness was increased with IVSs: 28mm and LVPWs: 22 mm, with systolic anterior motion (SAM) of the mitral leaflets, left ventricular outflow tract (LVOT) mean gradient was around 85mmHg, with mild to moderate mitral regurgitation (MR), and mild tricuspid regurgitation (TR) with peak gradient TRPGmax: 35mmHg. An electrocardiogram showed sinus rhythm with left ventricular hypertrophy, and without any rhythm disturbances. Based on these findings, hypertrophic obstructive cardiomyopathy was diagnosed and the medical therapy initiated. After several months of high dosage beta-blockers (metoprolol) treatment, the symptoms progressed and a surgical myectomy was proposed.

The surgery was performed through a median sternotomy using normothermic extra-corporeal circulation. After an aortic cross-clamping and cardioplegic arrest, the aorta was opened transversally and the aortic valve exposed. The thickened septum was visualized when the right coronary leaflet was retracted. A septectomy, as described by Morrow (2,3), was performed. An incision was made in the septum removing a wedge of myocardium to the left of the presumed position of

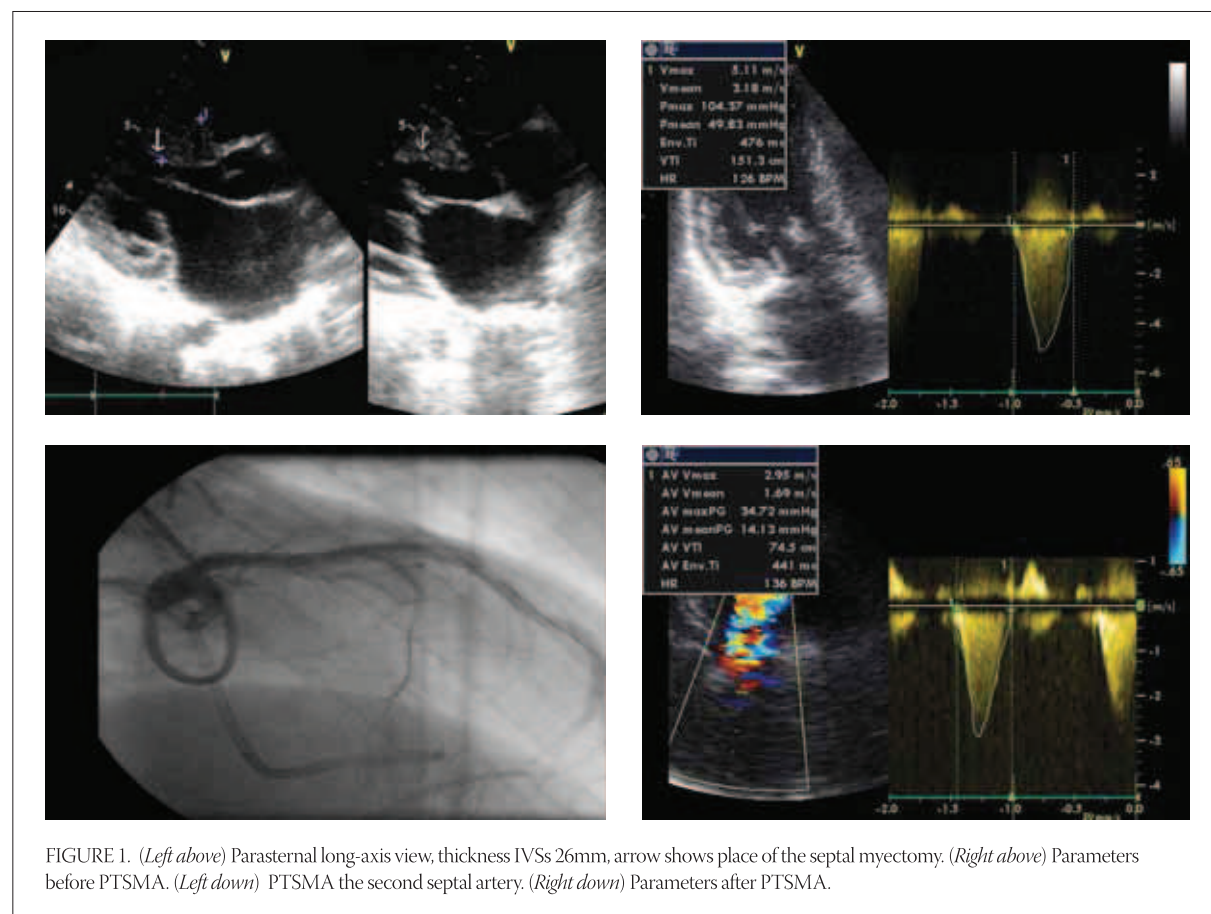




FIGURE 2. Different in hemodynamic values before and after PT SMA. A. Ao S/D/M 80/43/61 – LV S/D/E 179/11/27 B. Ao S/D/M 145/14/15 S/D/M 117/65/88

the His bundle. A tunnel 1,5 cm wide and 1,5 cm deep was made and this amount of septal tissue removed. The aorta was closed in the usual fashion and after de-airing, the patient taken off bypass and the chest closed. After the surgery, the patient was asymptomatic for four years. Thereafter she began to feel fatigue and chest pain and recurrent episodes of syncope occurred. An echocardiogram was performed and septal hypertrophy on the place of the previous surgical septal myectomy with septal thickness 26 mm, LVOT PGmean was 49mm Hg (Figure 1. right and left above). The systolic anterior motion (SAM) and central MR gradus 2 were found again. Interventional cardiologists suggested *PTSMA* with injection of the ethanol into the second septal artery (Figure 1. left down). The *PTSMA* procedure was performed as described by Sigwart (5) successfully (Figure 2.), but the procedure was complicated by a complete heart block, which recovered two days after *PTSMA*. IVS thickness was 19 mm and LVOTPGmean was 14 mmHg. During the discharge period the patient was without any further symptoms. At one year follow-up period the patient was asymptomatic without any syncopal episodes or

other related symptoms. ECG and Holter monitoring showed a continuous sinus rhythm between 46 and 80 beats/min without AV block or extrasystoles. Echocardiographic measurements showed no change from the post-procedure control (Figure 1. right down).

DISCUSSION

The hypertrophic obstructive cardiomyopathy was described first in the late 1950s and was defined as a primary myocardial hypertrophy, with dynamic left ventricular outflow tract obstruction. The symptoms of HOCM can be very different from a typical chest pain, dyspnoea, syncope, vertigo, heart failure, uncomfortable awareness of the heart beat, fatigue and sudden cardiac death. Our patient had symptoms similar to epilepsy which lead to an erroneous diagnosis and retarded proper recognition of the disease and adequate treatment. The aim of the treatment of symptomatic patients with HOCM is to improve functional limitations, reduce the extent of the outflow obstruction and improve the diastolic filling (4). It is possible to achieve this sometimes with a medical therapy alone, using calcium antagonists

such as verapamil or beta blockers. Surgical myectomy or PTSMA may be used in refractory patients. The surgical treatment of HOCM was the first time established 1960's and several modalities have been used successfully (5). The first PTSMA was performed by Sigwart (6), and was described as a localized therapeutic infarction (7) caused by the infusion of ethanol into one of the septal perforating branches of the left anterior descending artery. This leads to the thinning of the proximal interventricular septum, reduction of LV outflow obstruction and reducing LVOT gradient. Compared with surgical myectomy PTSMA has the advantage of being minimally invasive, easily repeated and having a relatively low major morbidity and mortality risk for patients with HOCM (8). In the literature there are a few case reports of successful PTSMA after the failed septal myectomy (9,10). There are also reports of successful septal myectomy after PTSMA (11, 12). This implies that these two interventional therapies are complementary and must be chosen carefully. The greatest

difficulty of PTSMA is in finding the septal target artery which can be identified by contrast echocardiography. Sufficient quantities of alcohol must be injected, according to the acute hemodynamic effect and the echocardiographically estimated size of the contrasted septal area (4). Based on long-term results of some authors (8,13) it is possible to observe the significant reduction of the resting LVOT gradient, improvement of symptoms and thus improvement in NYHA class after PTSMA. Such results are also published for a surgical myectomy, however there is no comparison to date on the long-term advantage of either treatment modality. In their studies some authors (14) found that SAM and related MR were not often eliminated using a ventricular septal ablation because some patients have structural abnormalities of mitral valve apparatus (papillary muscle displacement and mitral valve malcoaptation). Therefore it is necessary to evaluate each patient with HOCM and to decide what is the best therapeutic option for that particular patient.

CONCLUSION

Both therapeutical methods, the septal myectomy and percutaneous septal ablation can be successfully used for HOCM. In our opinion it is necessary to evaluate carefully each patient with HOCM to get the best terapeutical solution for the patients.

List of Abbreviations

HOCM	-	Hypertrophic obstructive cardiomyopathy
PTSMA	-	Percutaneous transluminal septal myocardial ablation
SAM	-	Systolic anterior motion
LVOT	-	Left ventricular outflow tract

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