TREATMENT WITH ALCOHOL SEPTAL ABLATION IN A PATIENT WITH DYNAMIC LEFT VENTRICULE OBSTRUCTION DUE TO SIGMOID SHAPED SEPTUM

SİGMOİD ŞEKİLLİ SEPTUMA BAĞLI SOL VENTRİKÜL OBSTRÜKSİYONU OLAN BİR HASTANIN SEPTAL ALKOL ABLASYON İLE TEDAVİSİ

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ABSTRACT

Sigmoid shaped septum is not a common cause of left ventricle dynamic obstruction. The treatment of symptomatic patients in this patient group is not clear yet. We describe a case with LVOT obstruction due to sigmoid-shaped septum, in which alcohol septal ablation improved LVOT gradient and relieved her clinical symptoms.

Key Words: Sigmoid septum, alcohol ablation, dynamic left ventricle obstruction

ÖZET

Sigmoid şekilli septum sol ventrikül çıkış yolu obstruksiyonunun sık görülen bir sebebi değildir. Bu hasta grubunda semptomatik hastaların tedavisi henüz net değildir. Biz septal alkol ablasyonu ile sol ventrikül çıkış yolu gradientinde azalma ve semptomlarda düzelme sağlanan, sigmoid şekilli septuma bağlı sol ventrikül çıkış-yolu obstruksiyonu olan bir vakayı sunduk.

Anahtar Kelimeler: Sigmoid septum, alkol ablasyon, dinamik sol ventrikül çıkış yolu obstruksiyonu

INTRODUCTION

Sigmoid shaped septum (SS) is a part of senil degenerative heart disease. It is not a common cause of left ventricule dynamic obstruction[1]. Therefore, the treatment of symptomatic patients in this patient group is not clear yet. Alcohol septal ablation is a procedure used to treat obstructive hypertrophic cardiomyopathy. There are few reports regarding the treatment with alcohol septal ablation of dynamic left ventricular outflow tract (LVOT) obstruction due to concentric left ventricular hypertrophy[2]. We describe a case with LVOT obstruction due to sigmoid-shaped septum in which alcohol septal ablation improved LVOT gradient and relieved the clinical symptoms.

CASE REPORT

A 72-year-old female patient was admitted to our hospital with dyspnea on effort. Although she had been diagnosed with high blood pressure (BP) previously, she had not received any medical therapy for a long time. Her BP was 140/90 mmHg and heart rate was 72 beats/min. A grade 3/6 ejection systolic murmur was detected at the apex area. Electrocardiography showed sinus rhythm with left axis deviation and repolarization abnormalities. Cardiac catheterization and coronary angiography was performed because of the chest pain one year ago. Coronary arteries were normal and dynamic LVOT gradient was not found. There was a cardiomegaly on chest X-ray. Two-dimensional transthoracic echocardiography (2DE) revealed the

sigmoid-shaped protruding markedly into the LVOT, systolic anterior motion of the mitral valve leaflets (SAM) and moderate mitral regurgitation (Figure 1 A,B). The left ventricular function was normal with ejection fraction of 68%. There were findings of concentric LV hypertrophy (LVH) in which septal thickness was 16mm and posterior wall thickness was 13mm . The angle formed by the ascending aorta and the interventricular septum was 96° (normal 145 ±7°). She didn't have either asymmetric ventricular hypertrophy or evidence of familial cardiomyopathy. The peak Doppler velocity at the LVOT was 6.56 m/s corresponding to a peak gradient of 120 mmHg. The peak gradient was measured as 140 mmHg with valsalva maneuvers (Figure 1 C,D). She didn't have a history of familial cardiomyopathy. Magnetic resonance imaging showed no evidence of asymmetric hypertrophy. Medical therapy with atenolol (200 mg/day) was initiated. One month after the initial theraphy, echocardiography showed no reduction of the LVOT pressure gradient and there was no improvement in symptoms. The patient's coronary arteries and left ventriculography except for modarate MR were considered normal in cardiac catheterization. There was a pressure gradient of 120 mmHg between the apex and the LVOT. Coronary angiography revealed two septal branches of which the first was cannulated (Figure 2 A,B). Myocardial contrast echocardiography was used to delineate the perfused area across the septal contact area of the mitral valve. After injection of 2,5ml of alcohol, the gradient resolved. The LVOT gradient dropped from 120 to 20 mmHg after the alcohol injection (Figure 2 C,D). The repeated echocardiographic examination performed 4 weeks after the ablation disclosed intracavity pressure gradient of 20 mmHg. The patient has been free from symptoms during the two year follow-up period.

DISCUSSION

SS is a morphological change characterized by a diminished angle between the basal ventricular septum and ascending aorta. This condition has been considered to be of no clinical significance and to be the result of aging, but stil it may cause left ventricular outflow obstruction by producing systolic anterior movement of the mitral valve, particularly when associated with of left ventricular hypertrophy[3-8]. In hearts with angled aortic roots, the top of the ventricular septum is tipped toward the mitral valve, rather than tapered toward the aorta, as in normal hearts. This configuration narrows the outflow tract of the left ventricle and can result in systolic anterior motion of the mitral valve. LVOT obstruction with a significant left ventricular pressure gradient may be related to clinical symptoms such as dyspnea on effort, chest pain and syncope, in patients with a sigmoid septum as well as those with HOCM. The optimal treatment for symptomatic patients with SS is not defined because this situation is not common.[1] Effectiveness of medical therapy with negative inotropic agents (beta blockers and disopromid) and with antiarythmic agents (cibenzolin) was shown in some case reports[6,9]. There is a one report that has shown the safety and efficacy of alcohol ablation with symptomatic concentric LVH and LVOT obstruction[4]. Although our patient had NYHA class 4 dyspnea even at rest, she showed a symptomatic improvement in a short time after the septal alcohol ablation. On follow up, the patient had no dyspnea on exertion and on echocardiographic examination, there is a 20 mmHg gradient in LVOT. At two year follow-up the echocardiogram revealed a gradient in the outflow tract of only 20 mmHg and the patient no longer experienced shortness of breath.

In cases of clinically important SS coexisting with HT, it is important to control high BP, because these patients often show hypercontraction of the left ventricle and this would deteriorate left ventricle pressure gradient. For this reason, beta-blockers are the first choice of anti-hypertensive medication which suppress left ventricle contractility to prevent hypercontraction of the left ventricle. Diuretics reduce circulatory plasma volume, which results in increased the LVOT gradients[10]. In addition, other antihypertensive drugs such as angiotensin converting enzyme inhibitors, angiotensin receptor blockers, calcium antagonists and alfa-blockers result in vasodilatation, which may increase left ventricle pressure gradient.

Therefore, these agents have a potential risk of accelerating the obstructive hemodynamic of the left ventricle and worsening the clinical symptoms. More studies are needed to elucidate how to control high BP in patients with clinically important SS coexisting with HT.

In conclusion, LVOT obstruction due to sigmoid-shaped septum is very rare. The treatment with alcohol septal ablation is a suitable treatment option in this patient group. However, longer follow-ups are needed for the effectiveness and safety of alcohol septal ablation.

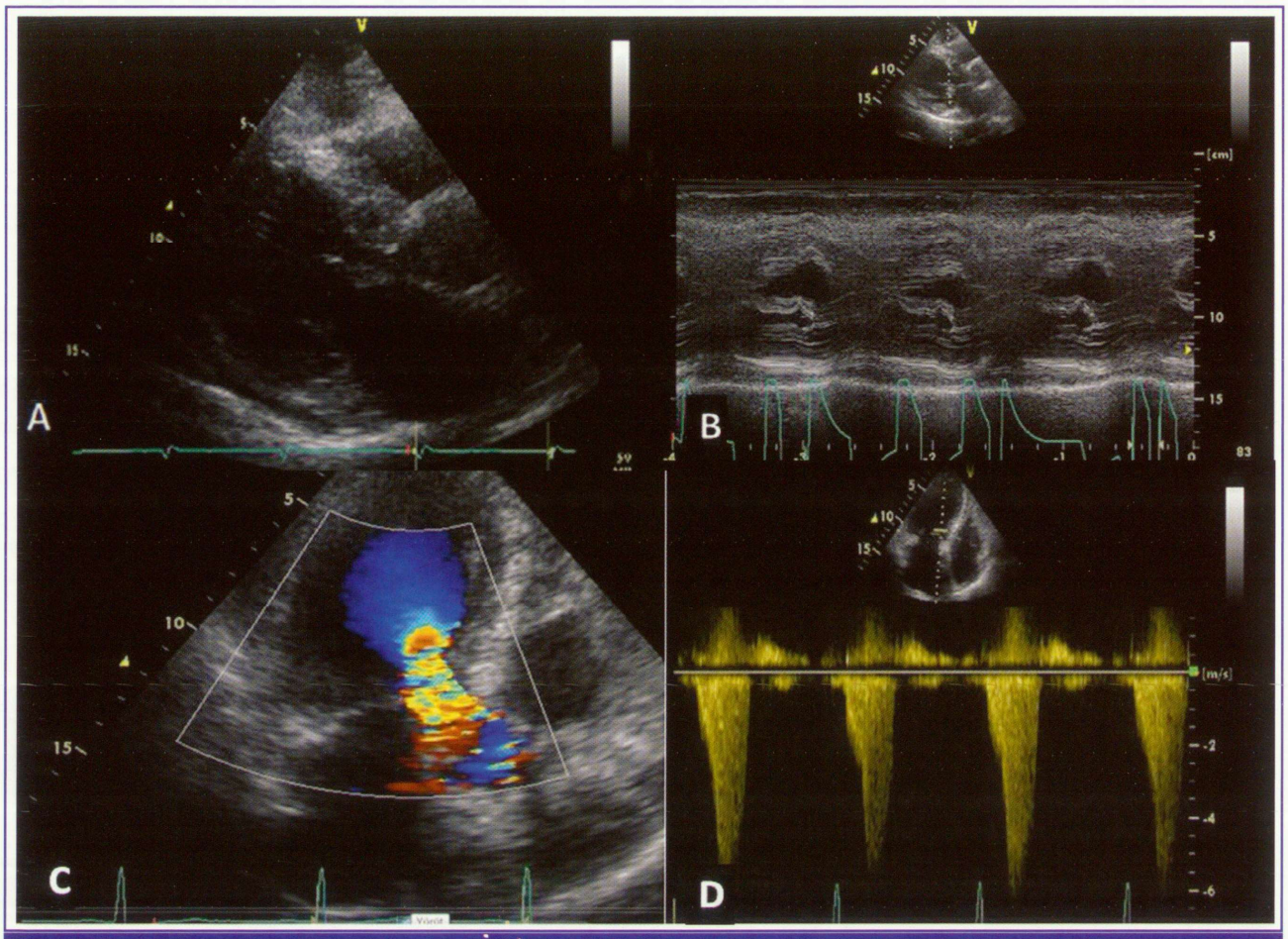

Figure 1. Two dimensional echocardiography on admission, A) Parasternal long-axis views showing the basal part of the interventricular septum bulging into the left ventricular outflow tract and the concentric left ventricular hypertrophy. B) M-mode echocardiography showing the septal anterior motion of the mitral valva. C)Apical five chamber view with color flow Doppler imaging demanstrates marked turbulance in the LVOT . D)Continous wave Doppler recordings showes late peaking systolic gradient with valsalvae manaverea

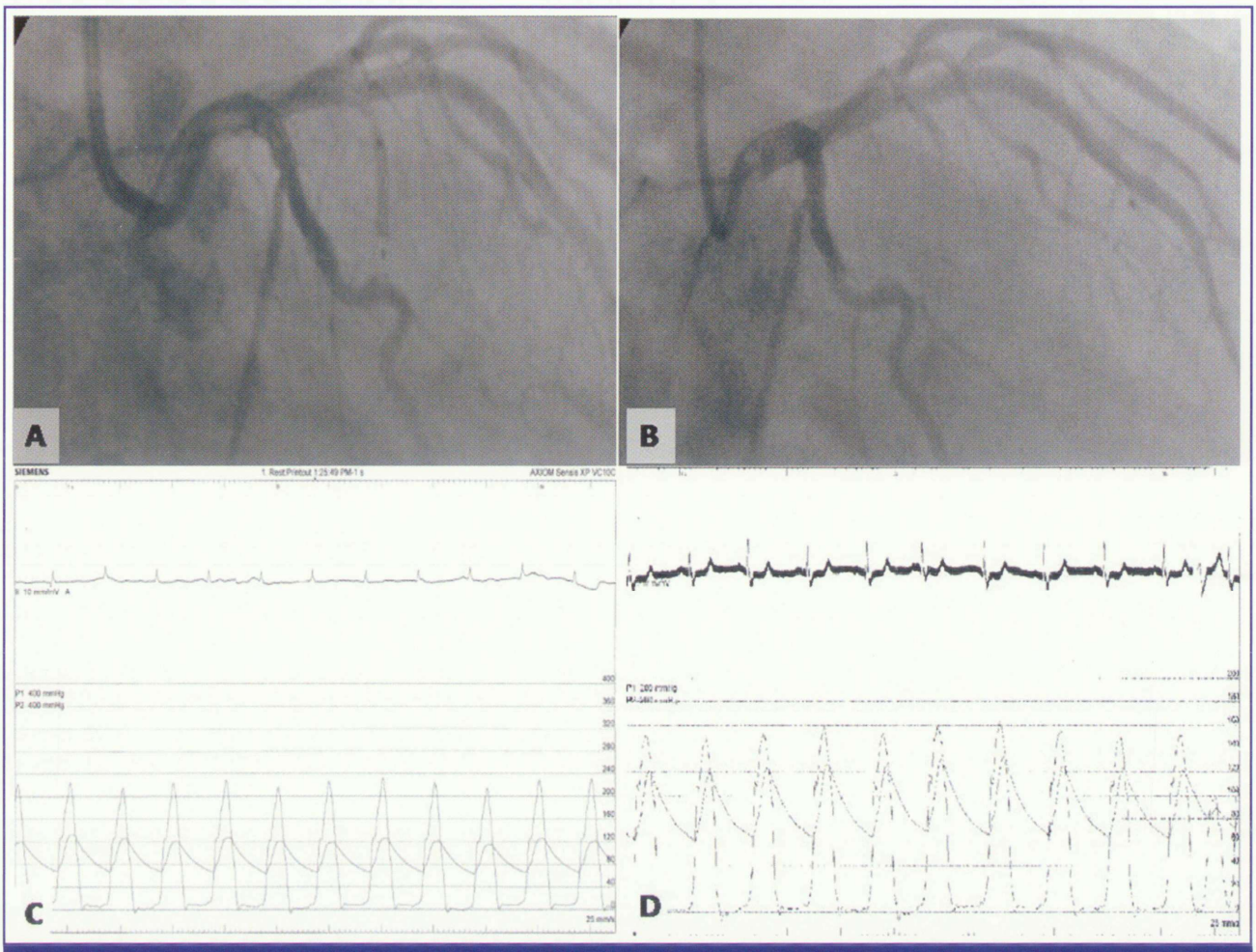

Figure 2. Alcohol septal ablation performed , A) Choosing the septal branch B) Vessel was successfully injected with 2.5 ml of 100% ethanol C) Successfully occluding the septal branch D) The LVOT gradient dropped from 120 to 20 mmHg before (A) and after (B) the ethanol injection

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