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ORIGINAL ARTICLE

Alcohol septal ablation in obstructive hypertrophic cardiomyopathy: Four years of experience at a reference center☆

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KEYWORDS
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Abstract
Introduction: We describe our center's initial experience with alcohol septal ablation (ASA) for the treatment of obstructive hypertrophic cardiomyopathy. The procedure, its indications, results and clinical outcomes will be addressed, as will its current position compared to surgical myectomy.
Objective: To assess the results of ASA in all patients treated in the first four years of activity at our center.
Methods: We retrospectively studied all consecutive and unselected patients treated by ASA between January 2009 and February 2013.
Results: In the first four years of experience 40 patients were treated in our center. In three patients (7.5%) the intervention was repeated. Procedural success was 84%. Minor complications occurred in 7.5%. Two patients received a permanent pacemaker for atrioventricular block (6% of those without previous pacemaker). The major complication rate was 5%. There were no in-hospital deaths; during clinical follow-up (22±14 months) cardiovascular mortality was 2.5% and overall mortality was 5%.
Discussion and Conclusion: The results presented reflect the initial experience of our center with ASA. The success rate was high and in line with published results, but with room to improve with better patient selection. ASA was shown to be safe, with a low complication rate and no procedure-related mortality. Our experience confirms ASA as a percutaneous alternative to myectomy for the treatment of symptomatic patients with obstructive hypertrophic cardiomyopathy refractory to medical treatment.

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PALAVRAS-CHAVE
Cardiomiopatia hipertrófica obstrutiva;
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Ablação septal alcoólica no tratamento da cardiomiopatia hipertrófica obstrutiva experiência de quatro anos de um centro

Resumo
Introdução: A ablação septal alcoólica (ASA) é a forma percutânea de tratamento invasivo da cardiomiopatia hipertrófica obstrutiva (CMHO). A propósito da descrição da experiência no nosso centro, procurar-se-á rever as indicações, os aspetos técnicos e práticos e os resultados da ASA, assim como a sua posição atual em comparação com a miectomia cirúrgica.
Objetivo: Avaliar os resultados da ASA numa série de doentes consecutivos tratados nos primeiros quatro anos de atividade.
Métodos: Estudo retrospetivo de todos os doentes, consecutivos e não selecionados, com CMHO, tratados por ASA, entre janeiro de 2009 e fevereiro de 2013.
Resultados: Durante o período de quatro anos foram tratados com ASA 40 doentes. Em três doentes (7,5%) repetiu-se o procedimento. A taxa de sucesso foi de 84%. A taxa de complicações *minor* foi de 7,5%. Foi necessário implantar *pacemaker* definitivo por bloqueio-auriculoventricular em dois doentes (6%, do subgrupo sem *pacemaker* prévio). A taxa de complicações *major* foi de 5%. Não houve mortalidade intra-hospitalar nesta população. Durante o seguimento clínico (22 $\pm$ 14 meses) a mortalidade cardiovascular foi de 2,5%. A mortalidade total foi de 5%.
Discussão e conclusão: Os resultados apresentados refletem a experiência inicial do tratamento com ASA no nosso centro. O procedimento foi bem-sucedido na maioria dos doentes, sendo a taxa de sucesso semelhante à descrita em outras séries, mas ainda com possibilidade de beneficiar de uma melhor seleção dos doentes. A intervenção também se revelou segura, com uma baixa ocorrência de complicações e sem mortalidade associada. A ASA é uma alternativa percutânea no tratamento invasivo dos doentes com CMHO refratária à terapêutica médica.

Introduction

Hypertrophic cardiomyopathy (HCM) was first described over 50 years ago,[1] and it was soon clear that one of its most characteristic features was the presence of dynamic subaortic obstruction in a significant number of patients.[2]

The genetic and phenotypic heterogeneity of this primary cardiomyopathy complicates clinical assessment and treatment, and has given rise to considerable debate.[3] One of the more recent controversies concerns invasive treatment of obstructive hypertrophic cardiomyopathy (OHCM); the introduction of percutaneous alcohol septal ablation (ASA) as an alternative to the established surgical technique of septal myectomy led to much discussion concerning the relative merits of the two treatments that continues to this day.

Most patients with HCM present significant intraventricular obstruction at rest or with provocation, usually the Valsalva maneuver (or, strictly speaking, the effort required for the maneuver).[4] This obstruction is caused by the systolic anterior motion (SAM) of the anterior leaflet of the mitral valve, which results from the force of left ventricular (LV) ejection and the narrowing of the LV outflow tract (LVOT); elongation of the mitral valve leaflets may also contribute in some cases.[5] The obstruction increases intracardiac pressure, oxygen consumption and cardiac work, and is also often associated with mitral regurgitation, coronary flow abnormalities and diastolic dysfunction. The degree of obstruction correlates with symptom severity and worse survival.[6]

Identification of patients with OHCM is important, because the obstruction is itself a therapeutic target; reducing it frequently results in improvement or complete resolution of symptoms. Medical therapy is effective in most cases and should therefore be the first-line treatment, using inotropic depressors such as beta-blockers, non-dihydropyridine calcium channel blockers or disopyramide (the latter unavailable in Portugal).

However, in 5–10% of patients medical therapy is ineffective, not tolerated or contraindicated.[7] In such cases, an invasive approach is an alternative for symptomatic patients with impaired quality of life. The aim is to reduce the thickness of the basal portion of the interventricular septum and hence the obstruction. The first technique used was surgical myectomy, in which a part of the septal muscle is excised; this was the only option for decades. In experienced centers, mortality is $\leq$2% in young patients without significant comorbidities.[8] It is not considered an easy procedure, since the surgeon faces considerable variation in the morphology of the LVOT with limited transaortic access. However, in centers with decades of experience that have treated hundreds of cases the procedure is highly effective, significantly reducing gradients and symptoms in 90–95% of patients.[7]

The need for another therapeutic option for patients with contraindication or high risk for surgery prompted the development of a percutaneous alternative. ASA consists of injection of alcohol into a coronary artery in order to cause limited myocardial necrosis in the basal septum, which when healed reduces septal thickness and hence the subaortic gradient. The technique has been the subject of controversy since its introduction, but its results are such that it has become a viable alternative to surgical treatment of patients with OHCM.