SURGERY VERSUS ALCOHOL SEPTAL ABLATION FOR HYPERTROPHIC OBSTRUCTIVE CARDIOMYOPATHY: THE CONTROVERSY

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INTRODUCTION

Hypertrophic cardiomyopathy is a common genetic illness affecting approximately one in 500 of the general population. The disease may occur spontaneously or be inherited in an autosomal dominant pattern.1 Initially, it was felt that most patients with this illness had severe symptoms of heart failure, angina and syncope and were at high risk for sudden death. However, population studies have revealed that many patients are asymptomatic and do not have the high risk of sudden death originally found in symptomatic patients referred to tertiary medical centers.

Roughly one-third of those with hypertrophic cardiomyopathy have obstructed left ventricular outflow, and the severity of the obstruction is measured by the left ventricular outflow tract gradient. Therapies that reduce the pressure gradient have been shown to improve symptoms and outcomes of patients with hypertrophic obstructive cardiomyopathy (HOCM).2 Many live with minimal symptoms while taking drugs such as beta blockers or calcium channel blockers. Dual-chamber cardiac pacemakers, while originally thought to effectively reduce the left ventricular outflow tract gradient, have in reality had very limited applicability in treating HOCM.1 For severely symptomatic patients, cardiac surgery has been a long-standing therapy. Recently, however, alcohol septa! ablation (ASA) has emerged as an alternative to surgery.3

SURGERY VERSUS ASA

Ventricular septa! myectomy is an established treatment for symptomatic HOCM,4 and more than 2,000 patients have received this surgery in the last 40 years. Long-term follow-up has revealed that surgery effectively reduces the left ventricular outflow cracr gradient, improving symptoms and exercise tolerance. Refined surgical techniques have produced better outcomes, and a relatively low (l-2%) surgical mortality is possible in experienced cencers. Recenc reports show better long-term survival in patiencs with HOCM who undergo surgery.4

By contrast, ASA is a catheter-based procedure char instills pure alcohol inco the hypertrophied ventricular septum via a septa! perforator artery.3 This results in a therapeutic myocardial infarction. The technique has been refined since its emergence a decade ago, and the procedural mortality even in the initial experience has been quite low. Ablation therapy has been shown to effectively lower the left ventricular outflow tract gradienc and improve symptoms and exercise rolerance.5 Longer-cerm follow-up of ASA shows that mortality from sudden cardiac deach, which was originally feared co be high, actually is less than what might be expected in an uncreated population of severely symptomatic patiencs.5 Studies also show an improvement in left vencricular diastolic function and mirral regurgitation as well as long-term regression of left ventricular hypertrophy.6 Unlike myeccomy surgery, ASA can not be applied to all patients with HOCM. Those wich abnormalities of the cardiac valves or papillary muscles must be treated with myectomy surgery combined with other techniques such as valve repair or replacemenc.

THE DEBATE OVER ASA

The advent of ASA as an alcernace treatment for severely symptomatic HOCM patienrshascreatedconcroversy.7 Some say char the induced therapeutic myocardial infarction could result in an "arrhyrhmogenic scar." Some also claim that this "arrhythmogenic scar" will result in an increased incidence of sudden death, ventricular dysfunction and/or heart failure during long-term follow-up. Because large numbers of pacients have undergone ASA worldwide, many believe chat the indications for therapy in terms of disease severity and symptoms have been lowered considerably below chose for surgery. Finally, there have been reports rhar shorc-cerm results with ASA are inferior to surgery because they produced less gradient reduction and more mitral regurgitation on follow-up, and that a number of ASA-treated patients have required a second procedure because results from che first were inadequate.

STUDY RESULTS FROM THE METHODIST HOSPITAL

Several studies comparing che results of ASA and surgical myecromy have been published, and all have been non randomized, uncontrolled and observational. The results of ASA performed at The Methodist Hospital in Houston,

Texas were compared with those of myectomy surgery performed ac the Mayo Clinic in Rochester, Minnesota.[8] Boch techniques produced a similar reduction in lefc ventricular outflow tract gradient and improvement in patient symptomatology, and both resulted in similar statistically significant improvement in exercise tolerance as measured by a treadmill exercise test. There was no procedural mortality in either group. However, the incidence of complete heart block requiring a pacemaker was considerably higher in the ASA group because chis was an early cohort, whereas the incidence of postoperative atrial fibrillation and aortic regurgitation was higher in the surgery group.

Several other non randomized studies of both procedures found similar results in terms of reductions of the lefc ventricular outflow tract gradient and improved symptoms. These studies also have shown some relatively minor benefits favoring surgery versus ASA.[9,10] While there have been calls for a randomized trial of these cwo therapies, such a study appears to be unlikely due ro: 1) the ethical and moral issues involved in randomizing patients co open-heart surgery, 2) the low volume of pacients available at any one site, and 3) the lack of sites having comparable expertise in both therapies co make a valid comparison.

CONCLUSION

Both ventricular sepcal myeccomy surgery and ASA have proven co be effective therapies for treating sympromatic patients with hypercrophic obstructive cardiomyopathy, although further delineation of che roles of both procedures is needed. In the fucure, longer-term results of ASA will clarify its effect on the long-term outcome of patients with HOCM. Because of the perceived simplicity of the catheter technique, however, there is a danger chat ASA will be widely used by operators with minimal experience and in practices chat lack broad-based institutional support in terms of treating hypertrophic cardiomyopathy.

For now, it is recommended chat both ASA and myecromy surgery be limited to tertiary centers with relatively high volumes and expertise in ueacing hyperrrophic cardiomyopathy - including the clinical, genetic, eleccrophysiologic and echocardiographic aspects of the disease.

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