JACC: CARDIOVASCULAR INTERVENTIONS
VOL. 9, NO. 5, 2016

ISSN 1936-8798/$36.00
PUBLISHED BY ELSEVIER
http://dx.doi.org/10.1016/j.jcin.2015.12.263

EDITORIAL COMMENT

Patient Selection for Alcohol Septal Ablation

Does Age Matter?*

Mackram F. Eleid, MD, Rick A. Nishimura, MD

"Age is an issue of mind over matter.
If you don't mind, it doesn't matter."
—Mark Twain (1)

Septal reduction therapy plays an important role in the treatment of patients with hypertrophic cardiomyopathy (HCM) and symptoms due to a dynamic left ventricular outflow tract obstruction refractory to medical therapy. Surgical resection of septal hypertrophy has been an established treatment for over 5 decades, with excellent symptomatic and hemodynamic improvement and a mortality rate of 0.4% among the most experienced centers (2). Although percutaneous transcatheter alcohol septal ablation (ASA) was first introduced 20 years ago (3), data regarding the long-term outcome of patients receiving this treatment have become available only in recent years (4,5). The 2011 American College of Cardiology Foundation/American Heart Association (ACCF/AHA) guideline for the diagnosis and treatment of hypertrophic cardiomyopathy had previously recommended ASA as an alternative to myectomy in the presence of advanced age or other comorbidities (Class IIa) or due to patient preference (Class IIb) (6). These recommendations were made on the basis of: 1) the lack of long-term follow-up with concern regarding long-term arrhythmic potential related to iatrogenic infarction; and 2) lesser efficacy in terms of symptom relief, particularly in the younger patient.

The study by Liebregts et al. (7) in this issue of *JACC: Cardiovascular Interventions* is a valuable contribution to the accumulating knowledge regarding long-term outcome of patients undergoing ASA. In their retrospective observational study at 2 tertiary referral centers, the outcomes of young (<55 years) and older (>55 years) patients undergoing ASA (n = 217) were compared with nonobstructive HCM patients managed medically. Five- and 10-year survival following ASA in young (95% and 90%, respectively) and older (93% and 82%, respectively) groups were quite favorable and were similar to an age-matched control group of patients with nonobstructive HCM. Furthermore, short-term procedural efficacy was similar between young and older patients (>90% of patients having New York Heart Association (NYHA) functional class I or II symptoms after 3 months of follow-up), as was the rate of additional septal reduction therapy (13% and 12%, respectively). The mean maximal left ventricular septal wall thickness was similar in young and older patients (20 ± 6 and 19 ± 4 mm, respectively). As expected, the rate of atrioventricular block requiring permanent pacemaker implantation appeared to be higher in older (13%) compared with younger patients (5%).

SEE PAGE 463

This study provides some reassurance regarding longer-term survival and procedural efficacy in young patients undergoing ASA, challenging the recommendation that ASA be reserved for older patients (6). However, despite the low event rate observed in the present study (5 arrhythmic events and 3 cardiac deaths), it is difficult to ignore prior warnings of increased ventricular arrhythmogenicity following ASA (8–10), compared with a signal for reduced rates of ventricular arrhythmia following myectomy (11), when considering treatment options for a young individual with many decades of a good quality of life ahead of them. On the basis of results to date, it is probable that ASA does not increase the overall risk of malignant

*Editorials published in *JACC: Cardiovascular Interventions* reflect the views of the authors and do not necessarily represent the views of *JACC: Cardiovascular Interventions* or the American College of Cardiology.

From the Division of Cardiovascular Diseases and Internal Medicine, Mayo Clinic College of Medicine, Rochester, Minnesota. Both authors have reported that they have no relationships relevant to the contents of this paper to disclose.

arrhythmias, but myectomy may decrease this risk (12,13). The ACCF/AHA guidelines also hinge on the concept that septal myectomy is a more effective procedure, with a higher percentage of patients having complete relief of symptoms as well as a lower rate of repeat procedures compared with ASA, particularly for younger patients <65 years of age (14). The study by Liebregts et al. (7) did not include a surgical myectomy group for comparison, and thus, conclusions regarding the efficacy of ASA relative to myectomy in this population cannot be drawn from this investigation. Although the outcome measures of NYHA functional class at 3 months were promising, what patients really desire is long-term durability of symptom relief to allow return to a normal lifestyle, which was not addressed.

At HCM centers of excellence where both myectomy and ASA are offered, patient selection for septal reduction therapy is highly nuanced and patient-centered, with a shared decision-making approach. Older patients and those with multiple comorbidities may be at higher risk for complications from septal myectomy, making a less-invasive option potentially more attractive for these patients (6). Multiple other factors must be taken into consideration, including the degree of septal hypertrophy, the location and size of septal perforators relative to septal hypertrophy, concomitant mitral valve pathology including aberrant papillary muscle insertion, as well as baseline conduction system disease and patient preference, which all may affect the risk-benefit ratio of ASA. Accordingly, age may only be 1 factor in the integration of all clinical data to arrive at a patient-centered recommendation for therapy. Local institutional expertise is another critical factor weighing on the choice of septal reduction therapy. At a HCM center of excellence with experience in septal myectomy, the weight of evidence continues to favor this option for a young patient being considered for septal reduction therapy, due to very low operative mortality, superior efficacy and lesser need for subsequent procedures. However, growing evidence supports that ASA is not fraught with the high risk that had been suspected and that long-term survival after ASA may be comparable to that of myectomy, potentially opening this treatment modality to a younger population as well as to centers that do not have the surgical expertise. It must be remembered that, as with any interventional technique, outcomes are highly dependent upon the knowledge and experience of the operators, and the excellent results in this study may not necessarily be extrapolated to all other centers.

Future studies comparing the long-term clinical outcomes of ASA directly with surgical myectomy in patients across a broad age spectrum at institutions with expertise in both techniques may help answer the question of whether ASA should be considered in a younger population. Additionally, even longer-term data will be required to determine the lasting impact of the iatrogenic septal infarction of ASA on lifetime arrhythmogenic risk in a younger population. Until that time, the question of how much age really matters in patient selection for ASA will remain.

REPRINT REQUESTS AND CORRESPONDENCE: Dr. Rick A. Nishimura, Division of Cardiovascular Diseases, Mayo Clinic College of Medicine, 200 1st Street SW, Rochester, Minnesota 55905. E-mail: nishimura@mayo.edu.

REFERENCES

1. Twain M. Available at: http://www.brainyquote.com/search_results.html?q=mark+twain%2C+aging. Accessed February 17, 2016.

2. Maron BJ, Dearani JA, Ommen SR, et al. Low operative mortality achieved with surgical septal myectomy: role of dedicated hypertrophic cardiomyopathy centers in the management of dynamic subaortic obstruction. J Am Coll Cardiol 2015;66:1307–8.

3. Sigwart U. Non-surgical myocardial reduction for hypertrophic obstructive cardiomyopathy. Lancet 1995;346:211–4.

4. Leonardi RA, Townsend JC, Patel CA, et al. Alcohol septal ablation for obstructive hypertrophic cardiomyopathy: outcomes in young, middle-aged, and elderly patients. Catheter Cardiovasc Interv 2013;82:838–45.

5. Sorajja P, Ommen SR, Holmes DR Jr., et al. Survival after alcohol septal ablation for obstructive hypertrophic cardiomyopathy. Circulation 2012;126:2374–80.

6. Gersh BJ, Maron BJ, Bonow RO, et al. 2011 ACCF/AHA guideline for the diagnosis and treatment of hypertrophic cardiomyopathy: executive summary: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. Circulation 2011;124:2761–96.

7. Liebregts M, Steggerda RC, Vriesendorp PA, et al. Long-term outcome of alcohol septal ablation for obstructive hypertrophic cardiomyopathy in the young and the elderly. J Am Coll Cardiol Intv 2016;9:463–9.

8. Cuoco FA, Spencer WH 3rd, Fernandes VL, et al. Implantable cardioverter-defibrillator therapy for primary prevention of sudden death after alcohol septal ablation of hypertrophic cardiomyopathy. J Am Coll Cardiol 2008;52:1718–23.

9. Noseworthy PA, Rosenberg MA, Fifer MA, et al. Ventricular arrhythmia following alcohol septal ablation for obstructive hypertrophic cardiomyopathy. Am J Cardiol 2009;104:128–32.

10. ten Cate FJ, Soliman OI, Michels M, et al. Long-term outcome of alcohol septal ablation in patients with obstructive hypertrophic cardiomyopathy: a word of caution. Circ Heart Fail 2010;3:362–9.

11. McLeod CJ, Ommen SR, Ackerman MJ, et al. Surgical septal myectomy decreases the risk for appropriate implantable cardioverter defibrillator discharge in obstructive hypertrophic cardiomyopathy. Eur Heart J 2007;28:2583–8.

12. Desai MY, Smedira NG, Bhonsale A, Thamilarasan M, Lytle BW, Lever HM. Symptom assessment and exercise impairment in surgical decision making in hypertrophic obstructive cardiomyopathy: relationship to outcomes. J Thorac Cardiovasc Surg 2015;150:928–35.e1.

13. Nishimura RA, Schaff HV. Septal myectomy for patients with hypertrophic cardiomyopathy: a new paradigm. J Thorac Cardiovasc Surg 2016;151:303–4.

14. Sorajja P, Valeti U, Nishimura RA, et al. Outcome of alcohol septal ablation for obstructive hypertrophic cardiomyopathy. Circulation 2008;118:131–9.

KEY WORDS alcohol septal ablation, myectomy, patient selection