Mitral Valve Prolapse and Severe Mitral Regurgitation

Richard B. Devereux, MD

Mitral valve prolapse is generally benign—and may even be beneficial for some individuals in view of the low body weight and blood pressure commonly associated with it—but it is well documented by studies of selected patients cared for at university hospitals that mitral prolapse may predispose to serious complications, including severe mitral regurgitation, infective endocarditis, and sudden death. Estimates of the risk of such complications based on clinical studies may be seriously biased, however, by factors causing severely affected patients to be referred to physicians engaged in clinical research. Even controlled studies that have estimated the relative risk of mitral regurgitation or infective endocarditis in individuals with mitral valve prolapse have not provided information on the actual risk of these complications in unselected adults with this condition.

Recently, however, progress has been made in quantifying the overall risk of infective endocarditis and identifying subgroups at particularly high risk of this complication. Studies from Sydney, Australia, and from New York have calculated the annual risk of endocarditis to be in the range of 1 in 5,000–7,000 among all adults with mitral prolapse and 1 in 2,000 among those with a murmur of mitral regurgitation. Other risk factors for bacterial endocarditis complicating mitral valve prolapse include male gender and older age.

In addition to these data linking mitral regurgitation to an increased risk of infective endocarditis in adults with mitral valve prolapse, other lines of evidence suggest the central importance of mitral regurgitation in determining the clinical severity of this condition. Thus, in recent reports of patients with pure, severe mitral regurgitation, from 38% to 64% have had mitral valve prolapse as the underlying etiology, making mitral prolapse the most common cause of this hemodynamic lesion in industrialized countries at present. Furthermore, complex ventricular arrhythmias and the risk of sudden death in patients with mitral valve prolapse are heavily concentrated among those with severe mitral regurgitation. However, no data have been available concerning the actual risk of an adult with mitral valve prolapse developing severe mitral regurgitation.

The study by D.E.L. Wilcken and A.J. Hickey (Circulation 1988;78:10–14) represents an important step toward correcting this situation by estimating that approximately 4% of men and 1.5% of women with mitral valve prolapse will require corrective mitral valve surgery by age 70. Because these estimates may be expected to be used in practice to advise patients of the risk of their condition as well as in designing future research studies, it is important to examine both the validity of the underlying assumptions and the likelihood that the results may be correctly extrapolated to the United States or other similar countries.

This study derived its estimates of risk by comparing the number of patients in various age and sex groups who had prolapsed mitral valves replaced in the Australian state of New South Wales in 1982 with the number of adult residents of this state expected to have mitral prolapse. While no “gold standard” exists for the diagnosis of mitral valve prolapse, the criteria of valvular redundancy and thickening without restriction of motion, supported by the finding of myxomatous changes in all cases examined microscopically, is standard and reasonable. Case ascertainment was facilitated by concentration of cardiac valvular surgery in New South Wales in 1982 at five university hospitals but might have been incomplete (resulting in underestimation of the risk of mitral valve surgery associated with mitral prolapse) if any residents of this state went elsewhere in Australia (e.g., Melbourne) for surgery. While the male predominance (36 of 50 patients, or 72%) among the prolapse patients undergoing surgery in the study by Wilcken and Hickey is striking, it is in line with the finding of other investigators that men comprised approximately two thirds of mitral valve prolapse patients with severe mitral regurgitation.

The only one of the authors’ assumptions that is likely to be in error is, as they discussed, that mitral valve prolapse is equally prevalent among men and women, while in both general population and family studies a majority of unselected adults with
mitral prolapse have been women. This makes it likely that the difference in risk of mitral surgery between men and women with mitral prolapse found by Wilcken and Hickey may actually represent an underestimate.

The applicability of Wilcken and Hickey’s observations to larger populations may be assessed with recent data from the United States. In both 1983 and 1984, approximately 16,000 patients underwent mitral valve replacement or repair in the United States.24,25 Among 84 patients undergoing mitral valve surgery at the Mayo Clinic in 1985, mitral valve prolapse was the etiology of severe mitral regurgitation in 21 patients (25%),11 while in recent years, the proportion has been closer to 20% at New York Hospital. Based on these data, one would estimate that mitral valve prolapse was the etiology of severe mitral regurgitation necessitating valve replacement in 3,200 or more patients annually in the United States. Combining the data discussed above that roughly two thirds of these patients are men with estimated population prevalences of mitral prolapse of 3% in men and 5% in women22 and census estimates that about 65 million men and 70 million women between the ages of 25 and 74 lived in the United States in 1985,26 a cumulative risk of mitral valve surgery over this 50 year–age span of nearly 5.5% among American men with mitral prolapse and of about 1.5% among affected American women could be calculated.

These calculations confirm those of Wilcken and Hickey and indicate that mitral valve prolapse leads to severe mitral regurgitation in an appreciable minority of affected men and in a smaller percentage of affected women. Further research is needed to identify predictors of high risk of progressive mitral regurgitation in individual patients and to determine whether high blood pressure, as suggested by Roberts,27 or other potentially preventable factors play an important role.

Acknowledgment

I would like to thank Virginia Burns for assistance in the preparation of this manuscript.

References

27. Roberts WC: Mitral valve prolapse and systemic hypertension (editorial). Am J Cardiol 1985;56:703

(Circulation 1988;78:234–236)

The opinions expressed in this editorial comment are not necessarily those of the editors or of the American Heart Association.
Mitral valve prolapse and severe mitral regurgitation.
R B Devereux

Circulation. 1988;78:234-236
doi: 10.1161/01.CIR.78.1.234
Circulation is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
Copyright © 1988 American Heart Association, Inc. All rights reserved.
Print ISSN: 0009-7322. Online ISSN: 1524-4539

The online version of this article, along with updated information and services, is located on the World Wide Web at:
http://circ.ahajournals.org/content/78/1/234.citation

Permissions: Requests for permissions to reproduce figures, tables, or portions of articles originally published in Circulation can be obtained via RightsLink, a service of the Copyright Clearance Center, not the Editorial Office. Once the online version of the published article for which permission is being requested is located, click Request Permissions in the middle column of the Web page under Services. Further information about this process is available in the Permissions and Rights Question and Answer document.

Reprints: Information about reprints can be found online at:
http://www.lww.com/reprints

Subscriptions: Information about subscribing to Circulation is online at:
http://circ.ahajournals.org/subscriptions/