



Misconceptions and Facts About Mitral Regurgitation

Edgar Argulian, MD, MPH,^a Jeffrey S. Borer, MD,^b Franz H. Messerli, MD^a

^aDivision of Cardiology, Icahn School of Medicine, Mt Sinai St Luke's Hospital, New York, NY; ^bSUNY Downstate Medical Center, Brooklyn, NY.

ABSTRACT

Mitral regurgitation is a common heart valve disease. It is defined to be primary when it results from the pathology of the mitral valve apparatus itself and secondary when it is caused by distortion of the architecture or function of the left ventricle. Although the diagnosis and management of mitral regurgitation rely heavily on echocardiography, one should bear in mind the caveats and shortcomings of such an approach. Clinical decision making commonly focuses on the indications for surgery, but it is complex and mandates precise assessment of the mitral pathology, symptom status of the patient, and ventricular performance (right and left) among other descriptors. It is important for healthcare providers at all levels to be familiar with the clinical picture, diagnosis, disease course, and management of mitral regurgitation.

© 2016 Elsevier Inc. All rights reserved. • *The American Journal of Medicine* (2016) 129, 919-923

KEYWORDS: Echocardiography; Mitral regurgitation; Vasodilator therapy

Mitral regurgitation is commonly encountered in clinical practice. Therefore, clinicians should be familiar with the basics of diagnosis, course, and management of patients with mitral regurgitation to provide appropriate care, evaluate disease progression, and refer to subspecialty service in a timely manner. The current review highlights several common misconceptions about mitral regurgitation.

MISCONCEPTION #1: PHYSICAL EXAMINATION IS DIAGNOSTIC OF SEVERE MITRAL REGURGITATION

Facts

The evidence base for diagnosis of severe mitral regurgitation by physical examination is surprisingly scarce. The typical holosystolic murmur of chronic mitral regurgitation remains a common finding. However, it is most often

found in patients with fixed rheumatic mitral regurgitation and may not be heard in patients with the currently more prevalent mitral regurgitation due to mitral valve prolapse. Nonetheless, the intensity of a holosystolic murmur generally appears to correlate with the hemodynamic severity of mitral regurgitation.^{1,2} In one study, in patients with *primary* mitral regurgitation a murmur grade 4/6 or more had a predictive value of 91% for severe regurgitation as defined by echocardiography, whereas a faint murmur (grade 2/6 or less) had a high predictive value for the absence of severe regurgitation.¹ Conversely, grade 3 murmurs had a marked scatter of severities and were of limited predictive value. The predictive value of auscultatory examination appears to be even worse in patients with *secondary* mitral regurgitation. In one study, 75% of patients with moderate to severe mitral regurgitation by echocardiography had no audible murmur.³ Of note, patients with acute severe ischemic mitral regurgitation commonly present with pulmonary edema and hemodynamic compromise, that is, low forward cardiac output and hypotension. Because of a marked increase in the left atrial pressure, in many of these patients the murmur of mitral regurgitation is soft and nonholosystolic (easy to miss in a crowded and noisy emergency department) or absent.⁴

Funding: None.

Conflict of Interest: None.

Authorship: All authors had access to the data and played a role in writing this manuscript.

Requests for reprints should be addressed to Edgar Argulian, MD, MPH, Division of Cardiology, Mt Sinai St Luke's Hospital, Icahn School of Medicine, 1111 Amsterdam Ave, New York, NY 10025.

E-mail address: eargulian@chpnet.org

Other physical findings (eg, evidence of left ventricular enlargement, brisk apical impulse, palpable thrill, presence of the third heart sound) may support the diagnosis of severe mitral regurgitation, but their predictive power has not been rigorously studied. It is very important to note that most physical findings of mitral regurgitation require specialized training and expertise to elicit and interpret. In the current era of significant time constraints for trainees and practicing physicians and the blooming of widely available technology, physical examination skills unfortunately generally have substantially declined.⁵

MISCONCEPTION #2: ECHOCARDIOGRAPHY IS HIGHLY ACCURATE IN MITRAL REGURGITATION GRADING

Facts

The current approaches to treatment of mitral regurgitation rely heavily on echocardiography.⁴ Echocardiography (especially transesophageal) has superb temporal and spatial resolution and can precisely identify and characterize the pathology underlying mitral regurgitation (primary or secondary). Three-dimensional echocardiography has further expanded the ability of this modality to delineate the anatomic abnormality.⁶ Echocardiography also is used routinely to grade the severity of chronic mitral regurgitation, but this gradation is complex and requires multiple echocardiographic parameters.^{6,7} Many of these parameters are derived from the analysis of the mitral regurgitation jet using Doppler echocardiography. Some useful hemodynamic measures of mitral regurgitation can be calculated, such as effective regurgitant orifice area, regurgitant volume, and regurgitant fraction, but most of these calculations are complex and rely on several different assumptions and require technically high-quality images.^{4,7} Other echocardiographic parameters used for mitral regurgitation grading include left atrial size, left ventricular size, pulmonary venous flow pattern, and estimated pulmonary artery pressures. The suggested echocardiographic approach to mitral regurgitation grading is integrative and requires interpretation of multiple measures.

It has been ingrained in clinicians' minds that echocardiography is extremely accurate in mitral regurgitation grading, especially in the severe/nonsevere grading that underlies the decision to proceed with surgery. Recent

studies using 3-dimensional echocardiography identified the complex and variable nature of the mitral regurgitant orifice area that precludes the assumptions used in 2-dimensional echocardiography.⁸ Also, temporal variability in the mitral regurgitation rate during systole may not always be accurately characterized by echocardiography.⁹ A multicenter study assessing the agreement between cardiac magnetic resonance and echocardiographic estimates of mitral regurgitation severity showed at best a modest correlation between results of the 2 imaging techniques.¹⁰ In patients undergoing surgery for mitral regurgitation, there was a strong correlation between postsurgical left ventricular reverse remodeling and mitral regurgitation severity as assessed by cardiac magnetic resonance ($r = 0.85$; $P < .0001$) and no correlation between postsurgical remodeling and mitral regurgitation severity as assessed by echocardiography. Mitral regurgitation grading based on echocardiography is complex, relies on multiple parameters, and may not be as accurate as is commonly assumed. Inconsistent reporting of many essential echocardiographic parameters by echocardiography laboratories across the country makes appropriate decision making for these patients even more difficult.¹¹

CLINICAL SIGNIFICANCE

- Primary and secondary mitral regurgitation may appear similar clinically but require different approaches to management.
- Left ventricular ejection fraction in patients with compensated severe chronic mitral regurgitation is commonly approximately 70%.
- Mitral regurgitation grading based on echocardiography is complex, relies on multiple parameters, and may not be as accurate as is commonly assumed.
- Practitioners should focus on a comprehensive stepwise approach to assessment of clinically suspected severe mitral regurgitation.

echocardiographic parameters by echocardiography laboratories across the country makes appropriate decision making for these patients even more difficult.¹¹

MISCONCEPTION #3: FAILING LEFT VENTRICLE IN CHRONIC SEVERE MITRAL REGURGITATION IS BEST IDENTIFIED BY LOW LEFT VENTRICULAR EJECTION FRACTION

Facts

Severe mitral regurgitation is associated with adverse left ventricular remodeling, which is characterized by progressive chamber enlargement and systolic dysfunction. With severe chronic mitral regurgitation, the left ventricle functions at favorable loading conditions: preload is increased as the result of regurgitant volume, and afterload is decreased as the result of partial systolic emptying into a low-impedance chamber (left atrium).⁴ As a result, left ventricular ejection fraction in patients with compensated severe chronic mitral regurgitation without myocardial systolic dysfunction is commonly approximately 70% (substantially higher than the average normal in the absence of mitral regurgitation), and the left ventricle is able to achieve an end-systolic dimension of less than 4 cm.¹² Consequently, progressive left ventricular systolic dysfunction in patients

Download English Version:

<https://daneshyari.com/en/article/2718277>

Download Persian Version:

<https://daneshyari.com/article/2718277>

[Daneshyari.com](https://daneshyari.com)