MITRAL STENOSIS WITH PULMONARY HYPERTENSION: WE SHOULD OPERATE EARLY

To the Editor:

The current 2014 American College of Cardiology and American Heart Association guidelines¹ for mitral stenosis recommend intervention for patients with severe mitral stenosis who have symptoms. There is no consideration of pulmonary hypertension in the management of patients with mitral stenosis. The guidelines do, however, recommend surgery for patients with mitral regurgitation who do not have symptoms when the systolic pulmonary arterial pressure is higher than 50 mm Hg, which is moderate pulmonary hypertension.¹ We are unaware of any large studies focusing on long-term outcomes for patients with mitral stenosis and pulmonary hypertension undergoing mitral valve surgery. With this in mind, we hope that our study² will help inform the next update to these guidelines.

Anyanwu³ raised 2 important points regarding our methodologic approach and its subsequent implications. First, Anyanwu³ raised the issues of the validity of our procedural coding and the robustness, accuracy, and completeness of the pulmonary hemodynamic data because (1) our study frame was too long from 1992 to 2012, and the accuracy of coding has improved with time; and (2) 20% of patients had unknown pulmonary arterial pressure. Since 1992, every case has been recorded in the data warehouse, along with clear indications. Every operative report in this study was reviewed by a surgeon (B.Y.) to confirm that the operation for the patient was for mitral stenosis. As such, we do not think that we either (1) excluded any patients operated on for severe mitral stenosis or (2) included any patients operated for other indications. Ninety-eight percent of the patients with unknown pulmonary arterial pressure were operated on from 1992 to 2002, probably because of less ideal documentation for patients from outside referrals. From 2003 to 2014, only 6 out of 218 (2.7%) had unknown pulmonary arterial pressure; however, our findings were still the same that long-term survival was impaired in mitral stenosis with moderate to severe pulmonary hypertension² (Figure 1). We are confident in the accuracy of our data.

FIGURE 1. Kaplan-Meier survival stratified according to the pulmonary arterial systolic pressure (PAP) as a combined normal pulmonary arterial systolic pressure and mild pulmonary hypertension (PH) group versus a moderate to severe pulmonary hypertension group. This cohort was from 2003 to 2014, which had a total of 218 patients, among whom 6 (2.7%) had unknown pulmonary arterial systolic pressure.

Second, Anyanwu³ raised another interesting point that patients with severe pulmonary hypertension may represent a subset with more rapid progression of mitral stenosis, because the average ages of the groups were similar. This suspicion was built on an assumption that all patients had mitral stenosis at the same age and should have developed pulmonary hypertension at the same rate. The ultimate progress of mitral stenosis and pulmonary hypertension is right heart failure. After adjustment for right heart failure, age, severe tricuspid regurgitation, and severe mitral regurgitation, patients with moderate to severe pulmonary hypertension had a 3-fold increased hazard ratio of death at 10 years relative to patients with normal pulmonary arterial pressure to mild pulmonary hypertension. The negative impact of pulmonary hypertension on 10-year survival was further confirmed by modeling pulmonary arterial pressure as a continuous variable instead of categorical variable.²

In summary, we found an adverse impact of moderate to severe pulmonary hypertension on long-term survival of patients with mitral stenosis. Although we concur with Anyanwu's concerns regarding limitations of observational approaches,³ our findings were not qualitatively impacted by confounding by patient and disease characteristics, coding practices, or modeling strategy. With this in mind, we stand by our conclusion that early intervention should be recommended for patients with mitral stenosis before moderate pulmonary hypertension develops.

Bo Yang, MD, PhD
Donald S. Likosky, PhD
Steven F. Bolling, MD

Department of Cardiac Surgery
University of Michigan Health System
Ann Arbor, Mich

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PULMONARY HYPERTENSION AND MITRAL VALVE DISEASE: STILL A BEAST Reply to the Editor:

Pulmonary hypertension (PHT) associated with valvular heart disease, especially mitral stenosis, often is reported as a major factor of morbidity and mortality during surgery for correction of left heart valve pathology. This is attested by several recent reports that differ with regard to the relative impact of different levels of pulmonary artery pressure. Coutinho and colleagues,¹ from my group, previously reported that “patients with severe MR, preserved LV function and PHT had poorer long-term survival and event-free survival even after a successful surgery.” Likewise, in an article recently published in the *Journal*, Yang and colleagues² found that “long-term survival after surgery for mitral valve stenosis was impaired by moderate to severe PHT,” thus suggesting that early surgery is necessary to “forestall further worsening of the pulmonary hypertension and improve long-term survival.”

By contrast, Enter and colleagues³ found that “mortality in surgery for mitral valve stenosis is unaffected by severe PHT,” thus questioning the impact of preoperative PHT in perioperative and late outcomes, although considering that “extreme PHT remains a risk factor.” As I stated in an accompanying editorial comment,⁴ “the work of Enter and colleagues is generally not in accordance with most articles previous published on this subject. It thus may constitute new knowledge, but we will have to wait for confirmation of these results by other investigators.”

In an editorial comment published together with the work by Yang and colleagues,² Anyanwu⁵ questioned some aspects of the methodology followed by these authors. He further implied that “an observation of superior survival in patients who underwent surgery at earlier (compared with later) stage of disease reflects more the limitations of the underlying methodology rather than a definite beneficial effect of early surgery on long-term survival.” This comment prompted the letter to the Editor by Yang et al⁶ published in this edition of the *Journal*, in which the concerns raised by Anyanwu⁵ appear duly addressed and the authors maintain the plea for early surgery before severe PHT occurs.

Not wanting to enter in the fundamentals and details of the discussion between these 2 articles, it seems to me that PAH in the setting of left heart valve surgery (aortic valve included) still requires a surgeon’s closest attention. As Coutinho and I⁷ stated in another editorial comment to Yang and colleagues’ article,² “the presence of severe PHT usually is not a contraindication to mitral valve surgery, whether for MS or MR.” But I am still concerned when pulmonary artery pressure is nearly or supra-systemic, when additional investigation regarding the reversibility of the PHT is warranted. “Because the majority of studies have shown a greater risk of perioperative and late mortality with moderate to severe PHT, strategies to reduce pulmonary artery pressure before surgery and an early intervention approach to the mitral valve should be pursued.”⁷

The current guidelines on treatment of valvular heart disease from both sides of the Atlantic reflect this concern. The 2014 American Heart Association/American College of Cardiology guidelines⁸ recommend intervention for asymptomatic patients with mitral regurgitation when systolic pulmonary pressure is greater than 50 mm Hg. I presume that identical recommendation could be warranted for mitral stenosis.

Manuel J. Antunes, MD
Center of Cardiothoracic Surgery
University Hospital and Faculty of Medicine
Coimbra, Portugal

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