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Commentary: Rheumatic mitral valve repair: Where is the *real word*?

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Rheumatic heart disease (RHD) remains a major health problem, affecting millions of people and causing 300,000 deaths annually.¹ In low- and mid-income countries of the southern hemisphere, the disease is still endemic and affects very young, poor, uninstructed patients who have limited access to health care. Lucky patients come to surgery in their teens and 20s (typical mean age of patients in the series, 20-25 years), often even below the age of 10 years. In these patients, mitral regurgitation is prevalent, and mitral stenosis (MS) is less frequent.² By contrast, in developed countries of the northern hemisphere, where rheumatic fever has been eradicated, we see older patients (typical mean age, 50-55 years) who had rheumatic fever 4 or 5 decades ago, whose pathology is a remnant of the acute process manifesting itself mostly as stenotic and thickened leaflet valves. In the former population, implantation of a prosthesis, whether mechanical or biological, represents a major problem because of increased thromboembolism and biodegradation. These problems have relatively less impact in the latter because of better compliance to anticoagulation and slower biodegradation process.

Mitral valve repair (MVRep), when feasible and durable, has gradually gained the preference of the surgical community for its proven advantages with regard to survival and freedom from nonlethal complications compared with mitral valve replacement (MVR). Although the initial experience of MVRep was mainly rheumatic, it gained its fame with degenerative disease, far more prevalent in western countries. However, recent reports originating from surgical centers of excellence have shown that rheumatic MVRep achieves excellent long-term results, often comparable to

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CENTRAL MESSAGE

Surgery for rheumatic valve disease refers to low- and mid-income countries, where the disease is endemic, and involves patients in whom an extra 10 to 12 years without a prosthesis will be a significant gain.

those of degenerative valves and significantly superior to MVR.³⁻⁷ These reports gave new strength to rheumatic MVRep, but the controversy goes on.⁸

In an article published in this issue of the *Journal*, Chen and colleagues,⁹ from Taiwan, compare the outcomes of MVRep and MVR for treatment of RHD in 5086 adult patients (mean age, 58 years) who underwent operation between 2000 and 2013, using data from Taiwan's National Health Insurance Research Database. Only 489 patients (9.5%) had MVRep. Perioperative outcomes were identical, with slightly less morbidity in the MVRep group. After a median follow-up of just less than 6 years, all-cause mortality was identical, but there was a significantly higher rate of reoperation in the MVRep group. This was confirmed in propensity score matching. Thus, the authors concluded that "among patients with RHD, MVRep is not associated with superior long-term outcomes. Patients should be carefully selected for MVRep because of its higher reoperation rate, particularly those with previous percutaneous mitral commissurotomy, which was the only significant risk factor for re-op."⁹ The authors, who initiated their article describing the reality in low- and mid-income countries (Taiwan is not one of them), classified their experience as the real-world.

I declare a conflict of interest: In my Editorial Commentaries, I am usually not critical to authors, and Chen and

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colleagues⁹ deserve our appreciation for their effort, but I am afraid I will have to be a little more caustic in this one for several reasons. First, the mean age of patients was 58 years and only 14% of patients were aged less than 40 years. Patients aged less than 20 years (n = 30) were excluded. Second, the Taiwanese experience largely consisted of patients with pure/dominant MS. Pure mitral regurgitation was present in less than 20% of patients, and these showed better outcomes, with few requiring a reoperation. Finally, in-hospital mortality rates were 7.1% and 7.3% in the repair and replacement groups, respectively. This is far higher than the values described by other groups, especially with regard to the well-known advantage of MVRep over MVR in terms of hospital mortality. Furthermore, one-third of the patients died later (20% mortality at 4 years), the stroke rate was 13%, readmission for heart failure was 11%, and rehospitalization was 60%, with no difference between repair and replacement. Obviously, this is not the real-world of RHD!

As one of the reviewers wrote during the editorial processing, “a major limitation of this work is the inclusion of very heterogeneous populations who can be very different for a number of variables for which it was not possible to account.” Indeed, there was an obvious absence of echocardiographic data, which made it impossible to accurately define valve changes during the follow-up. Reoperation without echocardiographic data is an unreliable marker of durability of repair or structural deterioration of bioprostheses. On the other hand, a mean follow-up of just less than 6 years is too short to evaluate the rate of reoperations in bioprosthetic valves. The authors observed a significantly shorter interval between initial operation and reoperation in the MVRep group compared with the MVR group (3.2 vs 5.0 years). Furthermore, despite the propensity score matching, the 2 groups might have remained significantly different in terms of predicted surgical risk because of missing information.

Chen and colleagues⁹ carefully avoided technical considerations, because “there was insufficient information in the database.” During the reviewing process of the article, they gave information about that in their own center, but these data are not included in the article. Virtually all patients received a complete ring, which, in my experience, should be cautiously used in MS with thickened leaflets, because it almost invariably generates higher transvalvular gradients, which can only increase with progression of the rheumatic process. Notoriously, a previous percutaneous mitral commissurotomy was the only risk factor for reoperation in the repair group. These cases are obvious examples of that progression, and perhaps they should not have been included in the study. Also, contrary to MR, in MS the annulus is usually not significantly involved in the disease.

In this study, the authors observed no better outcomes in patients receiving MVRep in hospitals with higher volumes of mitral valve (MV) surgery compared with those undergoing operation at hospitals with the lowest MV surgery volume. The article does not give sufficient information about the number of centers involved and respective level of activity, but I suspect that none could be classified as an experienced center for repair of rheumatic MV disease. This is in contrast to all the evidence showing better outcomes in MVRep reference centers.¹⁰ Curiously, the number of repairs in Taiwan almost doubled during the study period.

Recent reports originating from the same region of the world have shown completely different evidence in that MVRep is preferable to MVR even in this type of population.³⁻⁷ In most cases, the value of experience was notorious, and that only comes with willingness and innovation. But I want to stress, again, that when we talk about surgical treatment of rheumatic MV disease, we are essentially referring to patients in low- and mid-income countries, and the disease is still endemic, involving very young patients with limited access to medical care, in whom an extra 10 to 12 years without a prosthesis will be a significant gain. Theirs is the real world of RHD! By contrast, rheumatic valves in patients in developed countries are obviously a different problem, a remnant of the past that will be history in another decade or 2. In these patients, the perspective of a prosthesis implanted at the age of 50 or 60 years, may be less of a problem.

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