Our Data on Mortality from ST-segment Elevation Myocardial Infarction

Nuestros datos acerca de la mortalidad del infarto agudo de miocardio con elevación del segmento ST

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Acute myocardial infarction is one of the leading causes of mortality in Argentina. In ST-segment elevation acute myocardial infarction, the total duration of ischemia is crucial in determining the prognosis, as 'time is myocardium'. Technological advances have reduced ischemic times worldwide, which has been associated with a decrease in mortality. In Argentina, the ARGEN-IAM-ST registry is the only national registry of ST-segment elevation myocardial infarction with 10 years of follow-up. (1) The best way to monitor this condition is through such registries, which reflect real-world care, thereby enabling the planning of health policies and the evaluation of their outcomes.

The national effectiveness in terms of reperfusion therapy is noteworthy, with door-to-reperfusion times similar to those in international registries and reperfusion rates exceeding 90% in 8 of the 10 years of the study.

However, our main weakness, as evidenced by the registry, lies in the prolonged time from the onset of symptoms to presentation, which could explain the lack of decline in mortality over these 10 years compared with registries from other countries. (2,3) The average symptom-presentation time is 120 minutes, significantly longer than that reported in registries such as the Spanish registry, which is approximately 60 minutes. (4)

It is essential to improve public education on recognizing symptoms consistent with myocardial infarction and to implement national strategies to optimize patient referral to achieve early reperfusion.

It is worth noting the decline in patient enrolment over the years. A limitation of these registries is their representativeness. Given that participation is voluntary, they tend to reflect the practice of institutions with greater academic motivation—generally those with higher patient volumes, which are the ones that sustain the registry over time. (5) It is essential to reinforce the importance of maintaining and expanding these registries within the medical community to promote more equitable and effective health policies.

The lack of reduction in the mortality rate over these 10 years, despite the therapeutic advances, is discouraging; yet there is still hope that the healthcare system will improve, ensuring universal access and reducing delays. This will help to achieve a mortality rate from acute myocardial infarction similar to that seen in international registries.

Ethical considerations

Not applicable.

Conflicts of interest

None declared.

(See authors' conflict of interests forms on the web).

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AUTHORS' REPLY

As Dr Zacarías emphasizes, the data reveal a reality that leaves us with a bittersweet taste. On the one hand, we see high rates of reperfusion and, on the other, high mortality rates. When we take a closer look and realize how long it takes to seek medical care, we feel responsible for the lack of health promotion regarding acute myocardial infarction, as cardiovascular causes are the leading cause of death in Argentina, as evidenced by the vital statistics reports from the Ministry of Health. (1) Moreover, this is largely preventable if risk factors are managed appropriately, and when it does occur, mortality should be lower compared to other countries. (2) National publication records indicate that since 2008, mortality has not fallen below 8%. (3) But then, what does the high reperfusion rate tell us? It does not appear that the healthcare system has a problem with resources (we are, of course, speaking in general terms, as there are situations where resources are scarce), nor with the concept, since patients do undergo reperfusion. So why is mortality so high? The answer could lie in the failure to meet operational targets that have an impact on the total duration of ischemia. And how can we address the situation? The hospital door is a useful point at which to divide the problem into two parts. From the door outward, we must promote the early recognition of chest pain and warning signs. Inside the hospital, we must optimize our organization to receive patients and perform proper triage. Every institution should also be part of a myocardial infarction care network to effectively manage resources. Low-complexity centers should be aware of their support centers, which, in turn, should be aware of their role within the network to avoid delays, particularly within a fragmented healthcare system such as the one in Argentina. As we have previously mentioned, the ARGEN-IAM-ST is not the only registry showing these data, as they are available in previous studies and vital statistics from the Ministry of Health: from different angles, with the same results. One activity that could prove constructive at conferences is to discuss, in addition to mortality in myocardial infarction, potential solutions to the consultation and care process, such as the feasibility of implementing artificial intelligence to enhance triage in the emergency department, the use of data to improve the logistics of patient transfers, and coordination with cardiac catheterization laboratories, etc. (4)

Finally, it is important to mention the long-term costs for heart attack survivors. The total duration of ischemia accounts for not only mortality, but also in- and out-of-hospital complications. Although the ARGEN IAM-ST registry does not report on the latter, these complications are well known and generate a significant burden of healthcare costs due to left ventricular dysfunction, which, depending on its severity, leads to specific treatments for heart failure, the implantation of expensive devices and, in the longer term, the need for a heart transplant n some cases — all of which are preventable and avoidable. (5)

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Prognostic Value of the TAPSE/SPAP Ratio

Valor pronóstico de la relación TAPSE/PSAP

LUCRECIA SECCO[1, MTSAC,]

The study by Freyre Hernando J et al., published in the latest issue of the Argentine Journal of Cardiology, (1) investigates the prognostic value of right ventricle (RV)-pulmonary artery (PA) uncoupling in patients with transthyretin cardiac amyloidosis (TTR-CA).

In this study, which analyzed 191 patients, the authors concluded that the tricuspid annulus plane systolic excursion (TAPSE)/systolic pulmonary artery pressure (SPAP) ratio is an effective predictor of future hospital admissions for heart failure. A TAPSE/SPAP ratio ≤ 0.5 is an independent predictor of risk, even in the presence of preserved ejection fraction (EF). This cut-off point of 0.5 was determined to be optimal due to its clinical balance, with a sensitivity of 78% and a specificity of 67% for predicting heart failure events. (1,2)

In contrast, other indicators, such as the S-wave on tissue Doppler imaging, did not provide relevant information for predicting disease progression. This is because the S'-wave on tissue Doppler may be more susceptible to noise artifacts, measurement angles and the involvement of the basal segments characteristic of amyloidosis, which limits its prognostic value in this disease. (3)

The TAPSE/SPAP ratio reflects the ability of the RV to adapt to pulmonary circulation, a phenomenon known as RV-PA coupling; it integrates the relationship between RV contractility and afterload into a single measurement. In TTR-CA, progressive stiffness compromises this adaptation, promoting 'uncoupling'. (1,4)

One of the primary strengths of this study is its specificity in the TTR-CA population, unlike prior studies that used mixed populations with AL amyloidosis. Furthermore, this parameter stands out for its simplicity and clinical applicability. The TAPSE/SPAP ratio is a non-invasive, reproducible index that can be obtained using standard echocardiography equipment, which makes it easy to use. (1,5)

There are areas of opportunity that this study has not explored, which would be fundamental to consolidating this parameter. The incorporation of RV free wall strain could be valuable for obtaining a more precise measurement of deformation that is not dependent on the geometric limitations of TAPSE. (4)

In conclusion, the data provided by this article regarding the TAPSE/SPAP ratio identifies a practical threshold (≤ 0.5), which allows clinicians to identify high-risk patient subgroups at an early stage—something that other traditional markers do not achieve with the same precision in this specific population. (1,2).

Ethical considerations

Not applicable.

Conflicts of interest

None declared.

(See authors' conflict of interests forms on the web).

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AUTHORS' REPLY

We would like to extend our special thanks to Dr Secco for her detailed analysis and for underscoring the clinical relevance of the TAPSE/SPAP ratio as a marker of right ventricular–pulmonary artery uncoupling in transthyretin cardiac amyloidosis.

We agree that this ratio represents a simple, noninvasive, widely available tool to integrate right ventricular contractility and its afterload into a single measurement, providing prognostic value even in patients with preserved ejection fraction.

Furthermore, we consider the observation regarding the possible inclusion of additional parameters, such as right ventricular free wall strain, to be highly pertinent, as these could complement the assessment and provide greater precision in future studies.

The aim of our work is to provide evidence in a specific population, such as that with TTR-CA, where the early identification of high-risk patients remains a significant clinical challenge.

We would like to thank you once again for your comments and for the opportunity to enrich the discussion on this topic.

Kind regards,

Jaqueline Freyre Hernando
On behalf of the authors

The Gap in the Management of Bicuspid Aortic Valve Disease in Argentina

La brecha en el manejo de la válvula aórtica bicúspide en Argentina

VANESA DEL V. AUDIL[1,]

Bicuspid aortic valve (BAV) is the most common congenital heart disease in adults and is associated not only with valvular dysfunction but also with progressive involvement of the ascending aorta, constituting a true valvuloaortopathy. Its management requires a comprehensive assessment and a multidisciplinary approach aimed at optimizing long-term outcomes.

In the paper entitled "*Diagnosis and Management of Bicuspid Aortic Valve Disease in Argentina*", Carrero et al. (1) describe the current status of this condition in our setting, highlighting a significant gap between international guideline recommendations and daily practice. One of the most significant findings is that 50% of centers lack a Heart Team for complex decision-making, a figure that rises to 61.7% in inland centers, which is particularly worrying given the complexity of this condition.

From a surgical perspective, BAV disease should not be approached as an isolated condition. Surgery on the valve without an adequate assessment of the aorta and/or ascending, or vice versa, can lead to incomplete treatment strategies, with a negative impact on mid- and long-term outcomes. In this regard, it is essential to move towards the concept of an 'Aortic Team', integrating specialists with experience in aortic diseases into the multidisciplinary team. (2)

Another relevant aspect is the high proportion of indications for transcatheter aortic valve implantation (TAVI), which reaches 40.7%, despite the limited evidence available in patients with BAV. (1) Although recent trials have explored its use in low-risk populations, (3) durability and long-term outcomes in young patients remain uncertain. In this group, conventional surgery, valve repair and the Ross procedure offer advantages in terms of hemodynamics and reintervention-free survival.

Furthermore, the study highlights the low frequency of strategies such as valve repair or the Ross procedure in our setting, (1) which may reflect limitations in both surgical expertise and timely referral to specialized centers.

Furthermore, current evidence highlights the importance of family screening. Various studies demonstrate a significant prevalence of BAV and aortic dilatation in first-degree relatives, reinforcing the recommendation for systematic evaluation in this group. (4) However, adherence to this practice remains suboptimal in our context.

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Finally, it is noteworthy that only 30.8% of specialists systematically assess the distal ascending aorta, (1) a region frequently involved in acute events such as dissection, which highlights a diagnostic gap with potential clinical impact.

Taken together, these findings underscore the need to improve the organization of the healthcare system, promote multidisciplinary work and adopt a comprehensive approach to managing BAV. Heart Teams represent a paradigm shift in decision-making, enabling more individualized and evidence-based medicine. (5) Bridging the gap between knowledge and practice is, in this context, a priority challenge.

Ethical considerations

Not applicable.

Conflicts of interest

None declared.

(See authors' conflict of interests forms on the web).

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AUTHORS' REPLY

We thank Dr Vanesa del V. Audil for her interest in our work and her valuable comments regarding the reality of bicuspid aortic valve (BAV) disease management in our country. We fully agree with her perspective on the inherent complexity of this condition. As Dr Audil points out, BAV should be understood not as an isolated valvular heart disease, but as a true valvuloaortopathy. We share her concern regarding the low number of centers with Heart Team, which is useful for making complex decisions, as well as her suggestion to move towards the concept of Aortic Team. In such groups, multidisciplinary integration—including specialists in aortic diseases—is essential for designing long-term therapeutic strategies that go beyond a purely valvular approach.

Furthermore, the concern raised about the indication for TAVI in patients with BAV is highly pertinent. Our study reveals a trend towards the increasing use of this technique, likely driven by technological availability, but this must be analyzed with caution, as there is limited literature supporting this indication, and indeed, with adverse outcomes in patients with BAV.

Regarding the current scientific evidence on the therapeutic options, the results of the NOTION-2 study reinforce our stance of caution. (1) This randomized clinical trial, which is one of the few to have included a significant proportion of low-risk BAV patients who are excluded from most TAVI studies, demonstrated a higher incidence of moderate or severe paravalvular leaks (17.4% vs. 0% in the surgery group) and a higher incidence of the combined primary endpoint of death, stroke or rehospitalization in patients with BAV who underwent TAVI compared with those who underwent surgery, although the difference was not statistically significant (14.3% vs. 3.9%, p=0.08). These findings suggest that, even in experienced hands, the complex anatomy of the BAV remains a technical challenge that may compromise long-term clinical outcomes.

Furthermore, data from real-world registries and comparative follow-up studies indicate that, in young patients, TAVI in BAV is associated with a higher rate of immediate hemodynamic complications and a prosthetic durability that has yet to be established, compared with surgical aortic valve replacement. The presence of asymmetric calcification and frequent aortic root dilatation increases the risk of incomplete device expansion or annular damage. And prosthetic durability is a key factor in these very young patients, in contrast with those with degenerative aortic valve stenosis. Therefore, the lack of evidence about durability and long-term outcomes in younger patients with this valvular phenotype reinforces the need for rigorous Heart Team discussion before making decisions that compromise the clinical future of these patients.

Finally, Dr Audil's call to encourage timely referral to high-complexity centers for surgical techniques such as valve repair or the Ross procedure highlights a priority challenge for our healthcare system. We hope that this exchange will help highlight these gaps and encourage improvements in the organization of the healthcare system while increasing adherence to evidence-based recommendations.

Yours sincerely,

María Celeste Carrero
On behalf of the research group of "Dr. Oscar Orías" Council on Doppler Echocardiography and Vascular Ultrasound

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