

## Argentine National Registry of Magnetic Cardiac Resonance (RENAREC). A Valuable Initiative, Unique in Latin America

*Registro Nacional Argentino de Resonancia Cardíaca (RENAREC). Una valiosa iniciativa, única en América Latina*

DIEGO PÉREZ DE ARENAZA<sup>1,2</sup>

Registries are organized systems for collecting data for scientific, clinical, or public health purposes. They are a very valuable and complementary tool to observational clinical studies and randomized clinical trials, to determine the evolution of various diseases, the development of clinical issues, as well as describe medical and clinical practice in real life outside of clinical trials. (1). Cardiac magnetic resonance imaging (CMR) is a technique that has gained popularity in clinical cardiology practice, of inestimable relevance in the evaluation of patients with different cardiomyopathies and heart diseases, and an essential diagnostic element in modern cardiology practice. Several international registries have described the use of CMR in clinical practice. One of the first is the German registry, which enrolled more than 11 040 consecutive patients undergoing CMR in 20 centers. (2) This registry was followed by a European multicenter registry involving 15 countries and more than 57 centers, and enrolling more than 37 000 consecutive subjects undergoing CMR (Euro-CMR Registry). (3) Finally, the Euro-CMR Registry gave rise to a global registry, the Global CMR Registry, which included 17 CMR programs and more than 62 450 studies through a legal agreement. (4) These records have described the main indications, images quality, the safety and the impact on clinical practice. However, there is no differential information on the behavior of centers in Latin America.

For this reason, the National CMR Registry, RENAREC, carried out by Tomography and Magnetic Resonance Council of the Argentine Society of Cardiology, and led by Dr. Santiago Del Castillo (5) is of vital importance. In this registry, unique in Latin America, 34 centers participated (85% private centers, 59% with inpatient capacity) in 10 provinces. A total of 1131 patients (age 54±18 years, 61% male) were included. The main indications for the CMR study were hypertrophic cardiomyopathy (13.9%) and

ventricular arrhythmia (12.3%); 99.7% of the studies were performed without complications as reported by the researchers. The most frequent results were a normal study (31.2%), non-ischemic cardiomyopathy (14.7%), ischemic-necrotic cardiomyopathy (11.6%) and hypertrophic cardiomyopathy (8.9%). The clinical suspicion previous to the test was confirmed in 23.6% of the cases. In addition, the CMR generated a new unsuspected diagnosis in 48.7% of the cases.

In relation to other registries, the three main indications of the studies were, in the Euro-CMR Registry, coronary heart disease and ischemic risk stratification (34.2%), cardiomyopathies and myocarditis (32.2%), and determination viability (14.6%). On the other hand, in the Global CMR Registry the main indications were in the first place cardiomyopathies (21%), in second place viability (16%) and ischemia-evoking studies (16%) and in third place evaluation for electrophysiology studies, and pulmonary veins anatomy (15%). In RENAREC, regrouping the indications, the three main indications were cardiomyopathies (41%), coronary disease, viability and ischemia (14%), and electrophysiology or pulmonary vein studies (13%). Ischemia evocation studies were only 4.9% of the total indications. This is a radical difference from the practice in our country; ischemia evocation studies are a small proportion of CMR indications. The authors highlight this difference with respect to international registries. The lower use of CMR as a stress test in our environment probably reflects the widespread use of nuclear medicine perfusion studies or stress echocardiography tests using exercise or dobutamine, and the lower reimbursement of CMR by social insurance or medical providers compared to the reimbursement of the other studies.

The quality of the images in RENAREC was good in 91.8% of the studies, a finding similar to that of other international registries (2, 3). The two main causes of poor image quality were the presence of arrhythmias

Rev Argent Cardiol 2022;90:238-239. <http://dx.doi.org/10.7775/rac.v90.i4.20550>

SEE RELATED ARTICLE: Rev Argent Cardiol 2022;90:240-245. <http://dx.doi.org/10.7775/rac.v90.i4.20535>

<sup>1</sup> Cardiovascular Imaging Section, Cardiology Service, Hospital Italiano, Buenos Aires, Argentina

<sup>2</sup> Argentine Society of Cardiology, Council Area Coordinator

and the inability of the patient to maintain apnea. CMR was a very safe study, without complications in 99.7% of the subjects, with only two adverse effects related to gadolinium (1 minor, skin rash, and 1 major, anaphylactic shock) and one case of dyspnea triggered by dipyridamole. This proportion of adverse events is similar to that of the Euro-CMR Registry, where 96.3% of patients did not present any type of complications.

One of the most relevant findings of RENAREC is that in 48.7% of the patients a diagnosis was made of a previously unsuspected pathology. The RENAREC was more limited when evaluating medical behavior change, since there was significant underreporting of this information, available in only 24.3% (n=275) of the patients. In the Euro-CMR Registry, a change in diagnosis or therapeutic management was observed in 61.8% of cases. This may reflect the lack of centralized electronic history records in our environment and the fact that CMR is performed, in many cases, in outpatient diagnostic centers where patient follow-up is limited to practices and not to their clinical evolution.

Regarding the quality of data offered by RENAREC, we must consider both the data themselves and the conclusions that emerge from them. Data was completed by cardiologists with vast experience in CMR, which guarantees its veracity. On the other hand, the conclusions of this descriptive study are correct since they describe the practice of CMR in our environment and its conclusions are aligned with the practices described in other registries. The centers involved are representative since a large number (n=34) were included by invitation to researchers in 10 provinces of the country. In an ideal world, selection of the centers could have been random. (6). This claim would have been impossible to achieve, since knowledge of all centers capable of performing CMR is required, information that is not available. Lastly, the monitoring of data from a small random sample, although it could be ideal, undermines the feasibility of carrying out registries as valuable as RENAREC.

The researchers should be congratulated for the development of this valuable information that describes the practice of CMR in our country in a representative manner, contemplating various dimensions of the practice such as the indications, quality of the images, safety and impact of the findings. It is a unique piece of research in Latin America and shows how the CMR practice has similar standards to other regions.

#### Conflicts of interest

None declared.

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

---

#### REFERENCES

1. User's Guide to Registries Evaluating Patient Outcomes: Summary AHRQ Pub. No. 07-EHC001-2 April 2007 ISBN: 978-1-58763-246-4
2. Bruder O, Schneider S, Nothnagel D, Dill T, Hombach V, Schulz-Menger J, et al. EuroCMR (European cardiovascular magnetic resonance) registry: results of the German pilot phase. *J Am Coll Cardiol.* 2009;54:1457-66. <https://doi.org/10.1016/j.jacc.2009.07.003>
3. Bruder O, Wagner A, Lombardi M, Schwitter J, van Rossum A, Pilz G, et al. European Cardiovascular Magnetic Resonance (EuroCMR) registry--multi national results from 57 centers in 15 countries. *J Cardiovasc Magn Reson.* 2013;15:9. <https://doi.org/10.1186/1532-429X-15-9>
4. Global Cardiovascular Magnetic Resonance Registry (GCMR) Investigators, Kwong RY, Petersen SE, Schulz-Menger J, Arai AE, Bingham SE, Chen Y, et al. The global cardiovascular magnetic resonance registry (GCMR) of the society for cardiovascular magnetic resonance (SCMR): its goals, rationale, data infrastructure, and current developments. *J Cardiovasc Magn Reson.* 2017;19:23. <https://doi.org/10.1186/s12968-016-0321-7>
5. Del Castillo SL, Jaimovich G, Destefano L, De Zan M, Sciancalepore A, Ricapito P. Argentine National Registry of Magnetic Cardiac Resonance (RENAREC). *Rev Argent Cardiol* 2020;90:240-5. <http://dx.doi.org/10.7775/rac.es.v90.i4.20537>
6. Collinson J, Flather MD, Fox KA, Findlay I, Rodrigues E, Dooley P, Ludman P, Adgey J, Bowker TJ, Mattu R. Clinical outcomes, risk stratification and practice patterns of unstable angina and myocardial infarction without ST elevation: Prospective Registry of Acute Ischaemic Syndromes in the UK (PRAIS-UK). *Eur Heart J.* 2000;21:1450-7. <https://doi.org/10.1053/euhj.1999.1995>