Editorial comment

Cardiovascular magnetic resonance in the working diagnosis of MINOCA: the sooner, the better?

Resonancia magnética cardiovascular en el diagnóstico inicial de MINOCA: ¿cuanto antes, mejor?

Rocio Párraga, a,b Carlos Real, a,b and Rodrigo Fernández-Jiménez a,b,c,*

* Centro Nacional de Investigaciones Cardiovasculares (CNIC), Madrid, Spain
* Servicio de Cardiología, Hospital Universitario Clínico San Carlos, Madrid, Spain
* Centro de Investigación Biomédica en Red en Enfermedades Cardiovasculares (CIBERCV), Spain

About 5% to 10% of myocardial infarction (MI) patients show no signs of obstructive disease (>50%) in the main epicardial coronary arteries.1 This condition is known as MI with nonobstructive coronary arteries (MINOCA). From the clinical perspective, the presentation of MINOCA is similar to that of MI and even meets the fourth universal definition of myocardial infarction (2018). Given the implementation of increasingly accurate diagnostic methods, such as high-sensitivity troponin assays, the working diagnosis of this condition is more and more common. However, there is considerable heterogeneity among the causes to be considered in this setting. The most frequent etiologies are myocarditis, myocardial ischemia due to mechanisms other than athereosclerotic plaque rupture or erosion (eg, spontaneous coronary artery dissection and coronary vasospasm), and takotsubo syndrome.3,4 Another possible cause to consider in the working diagnosis of MINOCA is coronary microvascular dysfunction. This is caused by microvascular dysfunction or obliteration of the microvasculature in patients with coronary embolism or microvascular spasm, which are largely evaluated via invasive functional studies.3,4 Elucidation of the etiology is important due to the varying approaches and prognoses of these conditions.5 Indeed, the prognosis is particularly unfavorable if the cause is not identified; under these conditions, the entity is classified as MINOCA with no specific underlying etiology.5

In this regard, a major role in the etiological diagnosis of MINOCA is potentially played by cardiac magnetic resonance (CMR), which can be used to characterize the myocardium and detect contractility changes and other structural and functional defects.3,6 In addition, recent technological advances in CMR have permitted the quantitative measurement of myocardial perfusion and the detection of global perfusion deficits in coronary microvascular disease.7 A common characteristic of most of the potential causes of MINOCA is their transient nature or manifestation. Thus, essential factors are not only the use of appropriate diagnostic methods such as CMR that shed light on the final diagnosis, but also their timing, in order to improve their diagnostic yield.

In a recent article published in Revista Española de Cardiología, Junca et al.8 aimed to establish the diagnostic yield of CMR, as well as its ideal timing, in patients with a working diagnosis of MINOCA. To do so, the authors studied a cohort of 207 consecutive patients (mean age, 50 years; 60% men) assessed using CMR after a working diagnosis of MINOCA in a Spanish publicly-funded tertiary health care center between 2009 and 2022. The data were retrospectively collected and the authors excluded patients presenting with acute heart failure, a non-sinus rhythm, or any contraindication to CMR. The definition of MI was based on the 2018 expert consensus document9 and, to rule out significant obstructive disease in the coronary arteries, catheter coronary angiography or computed tomography coronary angiography was performed.

A final diagnosis after CMR was reached in 91% of patients: myocarditis in 45% of these patients, MI in 20%, takotsubo syndrome in 19%, and other cardiomyopathies in 7%. To elucidate the ideal CMR timing in this setting, the sample was divided into 2 groups: an early group and a late group. The time to CMR was defined as the number of days from hospital admission to CMR performance and was 5 [interquartile range, 4-6] days for the patients in the early group and 10 [8-12] days for those in the late group. Early CMR was associated with a better diagnostic yield vs late CMR (96% vs 86%). Although myocarditis was the most frequent diagnosis in both groups, it was more common in the early CMR patients (53% vs 35%). The authors concluded that CMR has a very high diagnostic yield in patients with a working diagnosis of MINOCA, particularly when the scan is performed in the first week after presentation.

These results are relevant for clinical practice. First, the findings reveal the value of CMR in the etiological diagnosis of MINOCA, given its good diagnostic yield, in line with previous evidence.5 Second, the data indicate that CMR should be performed in the first week, due to the even higher associated diagnostic yield. However,
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