

## EDITORIAL

## The time has come to change how emergency physicians evaluate chest pain in women

*Es el momento de cambiar en urgencias la evaluación del dolor torácico en la mujer*

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The study by Miró *et al.*<sup>1</sup> stands out for its timeliness of publication in line with the recent publication of the ACC/AHA guidelines for the assessment of chest pain (CP).<sup>2</sup> These guidelines specifically mention two recommendations focused on the diagnosis of the uniqueness of CP in women: 1) eliminating the term “atypical”, so closely associated with women, and replacing it with “noncardiac”, once this origin has been reasonably ruled out; and 2) the routine use of clinical decision algorithms for CP in the emergency department and outpatient settings, in both men and women, to ensure equitable access to treatment.

The study by Miró *et al.*<sup>1</sup> is very relevant because it updates data on the erroneous evaluation of patients presenting to the emergency department with suspected acute coronary syndrome (ACS), particularly in the subgroup of women. In addition, the study gives us a glimpse of the echo of the many publications that have reported underdiagnosis and undertreatment in this population group.<sup>2</sup>

This is a highly original study that analyzes a large retrospective cohort of patients that included 8 093 women and 9 979 men who attended the emergency department of a tertiary level hospital for evaluation of CP, with the final diagnosis of ACS being considered the correct diagnosis. The main noteworthy finding is the very low number of patients (< 1%) with an initial misclassification in the ACS rule-out, regardless of age, which supports the excellent diagnostic orientation of the center in which the population was selected. The authors observed a similar percentage of initial misclassification between men and women (0.9% vs. 0.8%), which contrasts with a previous study, where underdiagnosis was reported in women.<sup>3</sup> Predictably, men were significantly younger than women. The design and rigorous methodology employed in the analysis make the study very robust. As the authors themselves recognize, the low number of events made it inadvisable to adjust the regression analysis for such many variables, the results did not lose validity. On the other hand, the study adds novelty to a previous study by the same group on this common problem in the emergency department.<sup>4-6</sup>

Undoubtedly, the most relevant and paradoxical finding of the present study is the association between clinical symptoms highly suggestive of angina (CP during exercise, irradiation, and vegetatism) with an initial misclassification in women.<sup>1</sup> This observation suggests a gender bias because, even though women presented with classic angina symptoms, the possibility that these women had ACS was ruled out. In contrast, in men, there were no symptoms associated with an initial misclassification.

Another paradigmatic data in this study is the observation that women not initially oriented as ACS presented more oppressive pain (43.5% vs 36.4%) and more pain irradiation (27.4% vs 21.0%) than men. This fact emphasizes the need to break the inertia in health-care professionals of the association “CP in young women = non-cardiac pain”. Therefore, it is worth reflecting on whether, in these cases, the initial misclassification could have been preventable and the existence of this evident clinical bias, most probably related to the attitude of some professionals based on clinical intuition, is particularly alarming.<sup>3</sup>

Interestingly, in the Miró *et al.* study, cocaine use was associated with an initial misclassification in women. A negative gender bias is to think that women may use cocaine less frequently than men. The implementation of evaluation protocols in the ED should be the same for men and women, and therefore, urine toxic screening is indicated in patients under 50 years of age in both genders.<sup>1</sup>

Miró *et al.*<sup>1</sup> provide a more objective and solid analysis than previous studies. Thus, Guerianeau *et al.* found an association between the final diagnosis of ACS with very subjective and poorly reproducible factors, such as, for example, the “intuition of the physician” who conducted the telephone interview.<sup>3</sup> On the other hand, the study by Miró *et al.* differs from that of Domínguez-Rodríguez *et al.* in which other key factors for diagnosing CP are defined, such as age over 50 years, male sex, number of cardiovascular risk factors (CVRF), history associated with previous ischemic heart disease, pain characteristics, and electrocardiographic changes sug-

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gestive of ischemia. The findings of Miró *et al.* also differ from a recently published meta-analysis that observed a lower frequency of CP in women who consulted for suspected ACS.<sup>7</sup> In this regard, Miró *et al.* argue in their discussion that women present CP in a similar percentage as men in the context of ACS to the extent that they are at the same stage, and that on the contrary, CP may have disappeared in women if they have consulted late and necrosis is established.

Undoubtedly, establishing a correct diagnosis of ACS is an absolute priority, in both men and women, because it is a life-threatening syndrome. Specifically, recognizing an acute myocardial infarction (AMI) with ST-segment elevation (STEMI) determines the performance of percutaneous coronary intervention (PCI) and early reperfusion inevitably improves survival. In this regard, although progress has been made towards greater equity, women with STEMI continue to have a lower rate of activation of the AMI code, less reperfusion and higher in-hospital mortality.<sup>8</sup> Therefore, early recognition of AMI in women is paramount in order to offer appropriate reperfusion therapy to improve survival.

Another significant finding in the study by Miró *et al.* is that the mean age of the patients analyzed was less than 55 years. In this age subgroup, an increase in the incidence of AMI in women has been observed, with a worse prognosis, so a correct diagnosis is of utmost importance. In a young population of similar age, Litchman *et al.* found that the most frequent symptom in both sexes was CP (87% women vs 89.5% men), but women presented a greater number of additional symptoms regardless of the presence of CP, which sometimes makes diagnosis difficult.<sup>9</sup>

There was a much higher percentage of women who, having consulted previously, had not attributed a cardiac origin to the pain (53% women vs 37% men), a fact that would contribute to women presenting later than men when developing STEMI.

Finally, CP in women remains a singularity faced by the clinician in which there are some obscure points to be clarified. In ACS there are pathophysiological differences between sexes, but some factors such as the persistence of misconceptions transmitted for decades such as the supposed atypicality of CP in women may contribute to an initial misclassification and inadequate treatment. We must not overlook the fact that women still have a worse prognosis than men, after adjusting

for age and comorbidities.<sup>10</sup> Establishing a systematic diagnosis by applying evidence-based examinations based on clinical practice guidelines and not on the intuition of the treating physician is essential to improve the prognosis of women with ACS.

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