

# Closing the Gap on Sex Disparity in Acute Coronary Syndrome: Is It Time to Reconsider Our Definitions of “Typical”?

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*Observe, record, tabulate, communicate.* —Sir William Osler

Each year, >5.5 million individuals present to emergency departments in the United States to be evaluated for the potential acute coronary syndrome (ACS); only 13.5% are ruled in for acute myocardial infarction (MI).<sup>1</sup> Early identification and accurate interpretation of symptoms of ACS are crucial for appropriate diagnostic testing and administration of time-sensitive therapies to minimize myocardial damage.<sup>2</sup> The accurate interpretation of clinical symptoms for patients presenting to the emergency department with ACS has implications for patient triage, treatment, management, timing to treatment, and subsequent outcomes. However, women with MI continue to have a higher risk of underdiagnosis and undertreatment because of lack of recognition of early symptoms.<sup>3</sup> Previous studies have reported sex differences in symptoms for patients presenting to emergency departments with potential ACS, with findings that women are more likely to experience a greater number and more diverse symptoms compared with men.<sup>3–5</sup> Similarly, to increase awareness, guidelines continue to state that atypical symptom presentations are more common in women than in men.<sup>6,7</sup>

In recent years, studies have emerged to show that in a population of patients with suspected ACS, women do, in fact, present with typical symptoms the same as men and that symptoms are more predictive of acute MI in women than in men.<sup>6,8</sup>

Following in those footsteps, Ferry et al, in the current issue of the *Journal of the American Heart Association (JAHA)*,

report their prospective study of 1941 patients presenting to their emergency department with suspected ACS.<sup>9</sup> Using personal interviews, rather than symptoms described in the electronic health record, the authors found that chest pain also was the most common presenting symptom, reported by 92% of women and 91% of men with suspected ACS. Typical chest pain symptoms were more common and had a greater predictive value in women than men with acute MI, whether diagnosed using sex-specific or uniform criteria. Similarly, associated symptoms (diaphoresis, dyspnea, and nausea) were all more common in women with suspected ACS compared with men. This observation held true for both type I and type II MI.<sup>10</sup> The radar plot elegantly points to the overlap of symptoms by sex. The prospective design, with a collection of presenting symptoms by a trained research nurse (blinded to troponin levels) interviewing the patients, before biomarker confirmation, is a unique and strong point of this study. Also, the enrollment of patients before confirmation of diagnosis reduced the risk of selection bias. Furthermore, the study took place in the era of the new high-sensitivity troponin assay, making it more representative of current practice.

The limitations to the study are well described by the authors, including the single-center observations and enrollment of a relatively young population, with a low burden of comorbidities and without reported variable race or ethnicity. Thus, unanswered questions remain: Will these observations be equally applicable to a racially and ethnically diverse population and will an older group of women have similar symptoms? More important, with <15% of patients with diabetes mellitus included, will these findings apply to diabetic women who are well known for high risk of cardiovascular disease and lack of chest pain symptoms on presentation?

In summary, Ferry and coauthors<sup>9</sup> are presenting us with interesting and compelling evidence that women with typical chest pain symptoms should be triaged properly for ACS therapies similarly to men and that associated symptoms are also to be taken seriously in women, even more so than in men. Clinicians should not forget that the major source of mortality in women is heart disease, just as in men. Further work is needed to identify those who could fall outside these findings, as noted above. Should authors of international guidelines now

The opinions expressed in this article are not necessarily those of the editors or of the American Heart Association.

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*J Am Heart Assoc.* 2019;8:e013739. DOI: 10.1161/JAHA.119.013739.

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deemphasize the atypical nature of women's symptoms and reemphasize the recognition of typical chest pain+associated symptoms and move quickly to diagnose and intervene? Only time will tell.

## Disclosures

None.

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**Key Words:** Editorials • acute aortic syndrome • myocardial infarction • sex-specific • symptoms