EDITORIAL

MI often presents without chest pain in women

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THE TEXTBOOK PRESENTATION OF MYOCARDIAL INFARCTION (MI) IS NOT DIFFICULT TO RECOGNISE but in the undifferentiated world of primary care presentations it can be far from clear. This difficulty is compounded by the sex and ethnicity of the patient and the presence of comorbidities such as diabetes.

Women are often older than men at hospitalisation for MI and present less frequently with chest pain. It is generally accepted that patients without chest pain tend to present later and are treated less aggressively than those presenting with more typical symptoms. Furthermore, those presenting without pain have almost twice the short-term mortality rate.[1]

A recent study in *JAMA* has looked at the influence of both age and sex on the presentation and mortality rate associated with MI.[2] This was an observational study, from the National Registry of Myocardial Infarction, of more than a million patients of which 481,581 were female and 661,932 male. The authors looked at predictors of MI presentation without chest pain and the relationship between age, sex, and mortality rate in hospital.

'Women with MI have higher mortality rates than men within the same age group'

Women were significantly older than men at hospital presentation for MI; 73.9 years compared with 66.5 years (SD 12.4 vs 13.2 years, p<0.001).

The proportion of MI patients who presented without chest pain was significantly higher for women than men at 42.0% (95% CI: 41.8%-42.1%) vs 30.7% (95% CI: 30.6%-30.8%) respectively, P<0.001.

The authors found a significant relationship between age and sex with chest pain at presentation. This relationship was strongest for younger women and became less impressive with advancing age: multivariable adjusted age-specific odds ratios (OR) for lack of chest pain for women under 45 years old vs men, 1.30 (95% CI: 1.23-1.36); 45 to 54 years, 1.26 (95% CI: 1.22-1.30); 55 to 64 years, 1.24 (95% CI: 1.21-1.27); 65 to 74 years, 1.13 (95% CI: 1.11-1.15); and 75 years or older, 1.03 (95% CI: 1.02-1.04).

Furthermore, the hospital mortality rate was 14.6% for women and 10.3% for men. Younger women presenting without chest pain had higher hospital mortality rates than younger men without chest pain. This difference reversed with advancing age: under 45 years, 1.18 (95% CI: 1.00-1.39); 45 to 54 years, 1.13 (95% CI: 1.02-1.26); 55 to 64 years, 1.02 (95% CI: 0.96-1.09); 65 to 74 years, 0.91 (95% CI: 0.88-0.95) and 75 years or older, 0.81 (95% CI: 0.79-0.83).

The authors conclude that their study has shown that women with MI are more likely than men to present without chest pain and have higher mortality rates within the same age group. They also note that such differences were less striking or disappeared with increasing age.

The reasons for such differences are unknown. The authors postulate that the pathophysiology driving the higher mortality rates observed in younger women may also account for the apparent differences in MI symptom presentation.

Younger women with infarcts may have less narrowing of the coronary arteries than older women or men and as such present in a different fashion with vessel occlusion due to hypercoagulable or inflammatory states and coronary spasm.

Another explanation may be attributed to differences between men and women in cardiovascular risk factors. Young women who die from infarcts are often smokers with plaque erosions and relatively little coronary narrowing, whereas older women often have high cholesterol levels, plaque rupture and more severe coronary narrowing.

Clearly more research is needed to delineate the mechanisms behind this study's findings and allow clinicians to predict the likelihood of MI more accurately. Quite how to translate this information into clinical practice is unclear.

It would be all too easy to overburden cardiology services by referring young women with atypical symptoms who have a low absolute risk of significant coronary disease. However, clinicians should not be dissuaded from urgent referral in high-risk patients by a rather atypical presentation and the lack of classical cardiac sounding chest pain.

REFERENCES
1 Canto JG, Shlipak MG, Rogers WJ et al. Prevalence, clinical characteristics, and mortality among patients with myocardial infarction presenting without chest pain. *JAMA* 2000;283(24):3223-3229
2 Canto JG, Rogers WJ, Goldberg RJ et al. Association of age and sex with myocardial infarction symptom presentation and in-hospital mortality. *JAMA* 2012;307(8):813-822

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