Inflammation, Endothelial Cell Activation, and Coronary Microvascular Dysfunction in Women With Chest Pain and No Obstructive Coronary Artery Disease


Study Question: Is the syndrome of chest pain without obstructive coronary artery disease (CAD) associated with increased endothelial cell activity and inflammation?

Methods: Ninety-four women in the NHLBI WISE study with chest pain in the absence of obstructive angiographic CAD (<50% diameter stenosis in all epicardial coronary arteries) underwent assessment of microvascular function or coronary flow reserve (CRF) using Doppler velocities and intracoronary adenosine, measurement of inflammatory markers (n=78) and endothelial cell activation.

Results: Mean age was 54 years, 18% were current smokers, mean BMI was 30 kg/m², mean BP 138/78 mmHg, and 89% were postmenopausal. The median CFR was 2.26 (range 0.58–6.21), and was abnormal (<2.5) in 77%. The indication for coronary arteriography was chest pain-related in 79% of those with abnormal CFR vs. 48% in those with normal CFR. Rest chest pain in the past 6 weeks was present in 23% with abnormal microvascular function vs. 8.1% with normal microvascular function. Coronary flow reserve did not correlate with levels of C-reactive protein, IL-6, IL-18, tumor necrosis factor-α, transforming growth factor-β, and soluble intracellular adhesion molecule-1. Median levels of markers of inflammation and endothelial cell activation did not differ among the 57 women with abnormal CFR and the 37 women with normal coronary microvascular function. Multivariable models demonstrated no evidence of associations between markers of inflammation and of endothelial cell activation and CFR.

Conclusions: Coronary microvascular dysfunction is not associated with markers of inflammation and endothelial cell activation in women with chest pain in the absence of obstructive CAD. These results suggest that inflammation and endothelial cell activation may not play a pathophysiological role in coronary microvascular dysfunction.

Perspective: Other than for classic vasospastic angina involving the epicardial vessels, both the pathobiology and the pathophysiology of angina with mild coronary obstruction and with normal coronary arteries remain an enigma. Abnormal function of the resistance vessels has been demonstrated, as has been the association with classic coronary risk factors. Melvyn Rubenfire

Symptoms and Type of Symptom Onset in Acute Coronary Syndrome in Relation to ST Elevation, Sex, Age, and a History of Diabetes


Study Question: Do presenting symptoms in patients with the acute coronary syndrome (ACS) vary by extent of infarction (NSTEMI vs. STEMI), gender, and diabetes?

Methods: A total of 1939 patients at 11 hospitals in Sweden answered a questionnaire relating to the localization and intensity of symptoms, the presence of associated symptoms, the characteristics and experience of pain/symptoms, and the type of symptom onset.

Results: Men comprised 75% of the subjects. Compared to patients with NSTEMI, those with STEMI were younger, less likely to have a history of angina (16% vs. 41%, p<0.001) or a myocardial infarction (13% vs. 28%, p<0.0001), and less likely to have had previous PCI, coronary bypass, and CHF. Over 80% in each group had chest pain, which was described as discomfort or pressure in over 70%. Patients with STEMI differed from those without by more frequently having associated symptoms. They had higher pain/discomfort intensity and more frequently had pain with abrupt onset, reaching maximum intensity within minutes. However, this type of symptom onset was only seen in less than half the patients with STEMI, and only 1 in 5 fulfilled all the criteria usually associated with an MI. Women differed from men but not markedly. They more frequently reported pain/discomfort in the neck or jaw and back, vomiting, and scored their pain/discomfort slightly higher than did men. Differences between age groups were minor, and there was no difference between patients with and without diabetes.

Conclusions: The most striking finding was the low proportion of patients with the type of symptoms commonly associated with ACS. This is important for the planning of educational campaigns/programs to reduce patient delay. 

Perspective: The gender differences in chest discomfort/pain symptoms and description of other associated symptoms in patients with ACS are statistically significant but of little clinical meaning to the physician confronted with such a patient. Melvyn Rubenfire

Serum Blood Urea Nitrogen as an Independent Marker of Subsequent Mortality Among Patients With Acute Coronary Syndromes and Normal to Mildly Reduced Glomerular Filtration Rates


Study Question: Is elevated blood urea nitrogen (BUN) associated with adverse outcomes independent of serum creatinine (sCr)-based estimates of kidney function in patients with acute coronary syndromes (ACS)?