Early risk-stratification in patients with angina but non-diagnostic ECG

See page 397 for the article to which this Editorial refers

Cardiological practice has moved away from the old conservative approach led by the physician’s insecurity of ‘admit the patients first and then see what he has’, to a more aggressive early diagnosis and thus early treatment. This approach can save more lives[1] and reduce costs. In an evidence-based world when modern clinical governance for the good clinical practice is set to assure the delivery of high quality standards for the nation’s health, it is important to research into practices that can reduce hospital stay, yet produce an accurate diagnosis so that effective treatment can be instituted early. In patients with acute coronary syndromes, several markers of risk such as the clinical presentation, ECG changes, echocardiographical indications, troponin T, myoglobin and creatinine kinase MB, as well as new markers of inflammation and thrombolytic cascade activation, have the potential to guide risk stratification and subsequent choice of management strategy.

To interpret the patient’s complaint of chest pain, there should be three essential components: (1) careful history taking, (2) physical examination with resting ECG and (3) a commitment to a working diagnosis of ‘definite angina’, ‘probable angina’, ‘probably not’ angina and ‘definitely not’ angina[2].

Specific approaches to patients judged to have ‘definite’ or ‘probable’ angina are largely determined by the accompanying 12-lead ECG, regardless of the presence or absence of Q waves. If ST elevation is present in two or more leads, the patients should be admitted and triaged towards reperfusion therapy. If, however, ST elevation is not present, regardless of the presence or absence of Q waves, the patient with definite or probable angina should be admitted but not considered for reperfusion unless subsequent ECG monitoring documents persistent ST elevation. Usually patients specifically judged not to have angina (probably or definitely not) do not warrant...
hospital admission, unless the alternative diagnosis is one of the serious conditions that mimic angina (i.e. aortic dissection, hypertrophic cardiomyopathy, aortic stenosis, pulmonary embolism, acute ulcer disease). Patients designated to probably or definitely not also have a low pre-test probability of any biological tests being positive, according to the Bayes theorem. Therefore, it seems unrealistic to expect any of our existing methodologies to substantially refine the diagnostic accuracy that we can currently attain from this clinical approach with standard ECG.

Resting echocardiography may be helpful in the emergency room to identify an ischaemic aetiology of the patient’s chest pain by detecting the presence of regional wall motion abnormalities but again, it may prove difficult to judge whether or not those regional abnormalities are new or old. The role of any form of stress in the probably not and definitely not categories of patients remains unclear. Nuclear and echocardiographic partisans have both investigated the use of stress testing with equal vigour. Consequently, Geleijnse et al. hypothesized that the sensitivity and specificity of conventional exercise ECG improve with the addition of nuclear or echocardiographic imaging but the incidence of coronary artery disease in this population of probably not and definitely not falls well below 40% (low pre-test probability). Consequently, according to the Bayesian principles the predictive accuracy of such testing falls well below the acceptable level.

The present study by Geleijnse et al. is important because it focuses on the particularly difficult categories of definite angina and probable angina (high risk patients) but in circumstances where the ECG is non-diagnostic, which is crucial for the second clinical component previously described. The authors fulfilled all three essential components for the understanding of patients’ complaints, but in the absence of a diagnostic ECG, these high-risk patients would normally be admitted for long observation and/or coronary arteriography, thus adding significantly to hospital costs. They would also probably miss the benefits of reperfusion treatment. Consequently, Geleijnse et al. hypothesized that if they perform early dobutamine stress echocardiography in those patients in whom evolving myocardial infarction has been excluded (by biochemical markers) and it is negative, they can be discharged safely. About half of their admitted patients were therefore safely discharged with little or no long-term complications. Of those patients with a positive dobutamine stress, however, 25% went on to have PTCA or coronary artery bypass surgery as inpatients, thus benefiting from revascularization. Importantly, the only predictor for long-term events was the positive dobutamine stress echocardiogram.

The clinical algorithm that the authors of this study use is simple and can be performed in the vast majority of centres. It may even have a greater impact for patients admitted to district general hospitals who, by using dobutamine stress echocardiography, will triage their patients for referral to tertiary centres for coronary angiography and reperfusion while keeping or discharging those with a negative dobutamine stress test. Although the authors did not make a cost saving calculation in this study, it is obvious that by halving the number of patients who would otherwise undergo coronary angiography unnecessarily the cost saving is significant. In contrast to most previous studies involving stress modalities for early risk stratification in patients presenting with chest pain that focus on the probably not angina category, adding to the overall cost, this study focuses on the ‘probably yes’ group where savings may be significantly greater. The cost of care for patients who are admitted in the US with chest pain but do not have myocardial infarction is estimated at 13 billion dollars annually. What has been an acceptable practice in the past will not be an acceptable approach in the future. Technology is there for us to use smartly!

P. NIHOYANNOPOULOS
Hammersmith Hospital,
London,
U.K.

References


Eur Heart J, Vol. 21, issue 5, March 2000