Coronary CT angiography and possible acute coronary syndromes: A new opportunity for on call radiologists to wake up at night?

Is there a risk as a result of a recent publication in the New England Journal of Medicine [1] that we will change our practice and carry out coronary CT angiography whenever our emergency colleagues (those who have read the article!) want to rapidly exclude an ST negative acute coronary syndrome (NSTEMI)? The question that arises in this strictly North American multi-centre study is whether coronary CT angiography can be used because of its high negative predictive value to “triage” out from patients referred to the emergency department with chest pain, those which are not coronary in origin and therefore discharge them home faster and entirely safely.

Far be it from us to comment on the methodology and complex statistical analysis of this study, the quality of which is guaranteed by the prestigious reputation of the journal but rather we would like to firstly put some recent pathological findings in acute coronary syndrome into perspective and secondly compare this proposal with currently validated recommendations before heading throwing all of our energy into this new practice, which the publication in the New England Journal of Medicine appears to suggest we should do.

The main hypothesis of this study is that a patient who does not have a coronary artery lesion involving stenosis of at least 50% on a CT angiogram is at low risk (under 1%) of dying or developing a myocardial infarction within 30 days. The coronary artery lesions in acute coronary syndromes are not strictly comparable to those in chronic coronary artery disease, which restricts coronary blood flow on effort. In two-thirds of cases, they involve ruptured plaques and in a third they involve thrombogenic erosions. This thrombotic endoluminal obstruction, which angioplasty practitioners now thrombo-aspirate before treating the wall lesion responsible is seen in both STEMI (not the subject of this study) and NSTEMI acute coronary syndromes. Such thrombotic endoluminal obstruction undoubtedly reduces the coronary lumen very significantly although the obstruction often fluctuates because of spontaneous thrombolysis. The coronary lesions, which can become “unthrombosed” at a given time do not always involve stenoses of over 50% although this is the parameter used in the study to decide initially which patients to return home in the CT angiography group.

The secondary aim was to compare two asymmetrical groups in terms of their time to return home and the time before the reference visit (final diagnosis visit). According to the study, the hospital stay in the CT angiography group was 12 hours shorter than the comparison group although ultimately there was no real reduction in the number of coronary angiograms performed (5% compared to 4%), nor was their a reduction in the number of exercise tests performed: 16% in the CT angiography group compared to 18% in the conventional management group.
These 12 hours "gained" are often part of the 12 to 24 hours required to come to a final diagnosis of a progressive condition, which is illustrated by the change in troponin concentrations during the initial hours. This is particularly true when we consider low risk patients in whom the final diagnosis requires an exercise test if there is no change over the first 12 to 24 hours.

Apart from the interest which this publication has raised in the medical community which care for acute chest pain, is it not above all immediately important that we go back to the definition of acute coronary chest pain which is constrictive, spontaneous and lasts for 15 minutes or more or crescendo angina, in order to correctly stratify the patient’s risk category into three groups and follow the guidelines of the learned societies before believing that coronary CT angiography could become a predictor of an NSTEMI acute coronary syndrome as it has become in the field of pulmonary embolism?

Disclosure of interest

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Reference


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