Reviewer’s report

Title: What decides the suspicion of acute coronary syndrome in acute chest pain patients?

Version: 1 Date: 1 July 2013

Reviewer: Bertrand Renaud

Reviewer’s report:

Dear Editor;

I have been very pleased to review this interesting manuscript entitled: “What decides the suspicion of acute coronary syndrome in acute chest pain patients?”. This study raises an important issue in emergency medicine that is how emergency physicians build up their level of suspicion of acute coronary syndrome. The authors report an observational monocentre study conducted in Sweden which main aim, as far as I understood, was to identify among past medical history, current symptoms, ECG features and Troponin T level were mainly used by senior emergency physicians to base their level of suspicion of ACS. This is a very interesting goal, and the authors collected interesting data, therefore deserving consideration for publication in the BMC Emergency Medicine. However I have some important issues that should be addressed beforehand.

Major comments

First, I am not confident in the fact that I fully understand the main study aim. I would suggest the authors to clarify it.

Second, the authors did not accurately define the time when attending senior ED physician overall level of ACS suspicion is to be collected. Given that level of suspicion is prone to important variation during ED stay, this is a very important issue.

Third, I am concerned by the study methods. Indeed, methods are quite difficult to understand (see minor comments) and above all, I wonder if they fit to study aims. Indeed, the authors consider past medical history, physical symptoms, ECG features and Troponin T level as if they were mostly independent. While multiple logistic regression may help to differentiate statistically interdependent variables, it cannot account for the time dependence of these patient characteristics. Usually, symptoms are collected first, then depending on patient presentation ECG or past medical history and then TnT level. Therefore, based on this simple sequence, it appears that senior emergency physician suspicion of ACS is almost certainly scarcely based on TnT level.

Fourth, I suggest to provide the level of suspicion of ACS by an expert committee. Indeed, expert committee levels of ACS suspicion could be estimated independently and in a blindly fashion for each category of patients characteristics (symptoms at presentation, past medical history, ECG, TnT level).
I think assessing the level of ACS suspicion by an expert committee would be of much interest.

Minor comments

Background
- page 3
“chest pain with possible ACS is one of the leading causes of emergency care in Sweden [1, 2].”
Please specify incidence of possible ACS.

“Since clear diagnostic findings to rule ACS in or out are often lacking, management in the ED is normally based on the physician’s level of suspicion, i.e. the likelihood, of ACS.”
This sentence is confusing and should be usefully reworded. The authors should make clear that even if the current diagnosis criteria are accurate they are not so easy to implement in current practice, particularly among patients with comorbid conditions and that screening for ACS in a population of patients presenting with diverse complaints and pretest probabilities of ACS is quite problematic.

Methods
- Page 4

Setting
“During the study period, there was no standardized management protocol for patients with possible ACS, and no dedicated chest pain unit.”
This raises an important issue since the level of suspicion may vary according to different management protocol. Please clarify. Indeed, absence of unit protocol may result in diverse “physician’s assessment of the patient’s likelihood of ACS” and as therefore may constitute an important bias to this study. Please clarify.

Patients inclusion and exclusion
“Patients not following the physician’s recommendation of in-hospital care were excluded,”
Please specify whether patients had to have ongoing chest pain at presentation to the ED or if chest pain could have ceased yet.

“Fifty-six patients were excluded because of incomplete study data.”

Transfer to the results section

Patient data collection
“The treating emergency physician’s subjective assessment of the patient’s likelihood of ACS”
Is this diagnosis suspicion level? If not please clarify.
«ECG, were shortly after the patient encounter noted on special forms by the physician or by one of the authors (MS) based on the physician’s assessments.»

This is confusing. I understand that there were 2 ways of assessing "treating emergency physician’s subjective assessment of the patient’s likelihood of ACS" one by the actual treating senior physician and the other by one of the authors, that is to say a surrogate of the actual treating senior physician. This denotes that some senior physicians did not constantly participate to the study protocol and more worrisome most certainly altered overall study results. Indeed, since an author acting as surrogate treating emergency physician could not based their level of suspicion on "the entire clinical picture" which is built on unmeasured subtle patient characteristics most certainly substantially differ from that of a true attending senior physicians. Both subjective assessments are of interest, but should not be confounded without prior demonstration that they were equivalent.

« The physician’s assessments, as noted on the form”
Please provide a copy of the form

Page 5

“There was no review for quality of these assessments.”
Please be more specific. What does it mean exactly?

“The first troponin T (TnT)”
Please specify why only the first Troponin T was retrieved from the electronic patient record.
Please indicate if there was a superior limit of time for collecting "the treating emergency physician’s subjective assessment of the patient’s likelihood of ACS" and how was defined the "the entire clinical picture, as well as the underlying assessments of the symptoms and ECG, were shortly after the patient encounter"

“The definitions of symptoms typical of AMI and UA were those generally used at the hospital during the study period, and followed the recommendations by the European Society of Cardiology, the American College of Cardiology and the American Heart Association [21, 22].”
Were those definitions provided to senior emergency physicians at time of patient symptoms classification?

“Where the physician noted two different degrees of suspicion, the strongest suspicion was registered for the study.”
Were those definitions provided to senior emergency physicians at time of patient symptoms classification?

“ST-elevation or depression # 1 mm in at least two anatomically contiguous leads”
That does not correspond to standard lead and 2 mm for precordial leads?
“as obvious ACS, strong, vague or no suspicion of ACS, based on the entire clinical picture.”

Is this scale different from that used for classifying symptoms? Please clarify.

“suggested definitions”
Providing those definitions per se altered “treating emergency physician’s subjective assessment of the patient’s likelihood of ACS”. As a result, the current study could not be considered as observational. This is an important issue since this classification constitutes the main study endpoint. Please comment and clarify.

“The diagnostic criteria for ACS during the study period were those of the European Society of Cardiology, the American College of Cardiology and the American Heart Association [21, 22].”

I do not understand the usefulness of this sentence. Does this refer to a gold standard classification of patients with regard to ACS? Please clarify and, if appropriate, explain how this was done and who performed such classification.

Page 6
Statistical analysis
“To evaluate how the diagnostic tools were used to determine ACS suspicion, we analysed simple associations between the physician’s ACS suspicion on one hand and TnT levels, ECG changes and symptoms on the other (Tables 2 and 3), and applied two different logistic regression models (Table 4).”

Please be more specific and indicate how this was done. Indeed, in routine practice, initial and overall suspicion of ACS, patient’s symptoms, ECG changes and TnT levels are not independent. Therefore, senior ED physician suspicion of ACS is time-dependent. Therefore the authors should specifically explain how they took into account of this characteristic (time dependence) to standardized ACS suspicion measure across senior ED physician involved in the study.

“The outcome in the first model was the odds ratio for suspicion compared to no suspicion”

Outcome cannot be the odds ratio. This is confusing, please clarify. I suggest to rewrite analysis design as, in its current form, it is quite confusing and therefore deserves clarification.

Page 7
Results
“As shown in Figure 1, out of 1222 consecutive chest pain patients, a total of 1151 patients were included in the study.”

Please also indicate in Figure 1 “Patients not following the physician’s
recommendation of in-hospital care were excluded, as were patients unable to give a clear symptom history due to e.g. alcohol intoxication or dementia, and those transferred to other hospitals for in-patient care"

« the discharge diagnosis »
Please indicate how this diagnosis was established.
“Likelihood of ACS and underlying assessments”
I failed to understand the exact meaning of this sentence. Please clarify.

«Instead, both these patient groups were in some 7 out of 10 cases assigned a strong suspicion of ACS.”
This is confusing, please clarify.

Level of interest: An article of importance in its field

Quality of written English: Needs some language corrections before being published

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:

I declare that I have no competing interests