Reviewer's report

Title: Acute myocardial infarction after amoxycillin - induced anaphylactic shock in a young adult with normal coronary arteries: a case report and review of literature

Version: 2 Date: 21 September 2004

Reviewer: Marco Roffi

Reviewer's report:

General

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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

The manuscript should focus on the event, namely a prolonged coronary spasm triggering an MI, and get into the specific pathophysiology in this patient such as the anaphylaxis and possibly the adrenaline (as now was well done in the reviewed paper). Conversely, the discussion should not get into other conditions (such that a thrombotic event), which is known to be associated with prolonged coronary spasms but for which we have no evidence.

Following points speaks for a coronary spasm and against a thrombotic occlusion (most mentioned already in my first review):

1. The ST-elevation on ECG is not limited to a coronary territory. Again, this IS NOT an infero-lateral MI (page 4). Despite the persistence of the Authors (point 2 response) this ECG does not represent a RCA occlusion.
2. Despite prolonged pain (2 hours up to thrombolysis) the patient has no wall motion abnormalities on Echo and LV angio.
3. The angiographic appearance of persistent luminal narrowing in the mid-distal LAD is typical following prolonged spasms. As previously stated, the diameter of the LAD is smaller as the one of the marginal branch of the left circumflex. This is not normal (against statement of point 3 of the response).
4. The acute onset of massive ST-elevation and the complete resolution of them is again typical of spasms. The quick/immediate (?) (not stated the time frame) resolution of ST-elevation following lytics speaks more for a spasm (of course then the relation lytics-resolution is coincidental) than for a thrombotic process. In a large clinical trial we found that among over 1700 patients treated with reteplase for acute MI complete ST resolution (defined as >70%) was present in only 1/3 of patients at 1 hour (data submitted for publication).
5. The motivation that a thrombosis must have been present because the spasms did not resolve after nitroglycerine IV (point 1 response) is not valid. Accordingly, a dose of 25µg/min IV for a patient of 130 kg is virtually homeopathic. It is known that coronary spasms may be refractory, even to intracoronary nitroglycerine or calcium antagonists.

Additional points

- The mechanistic explanation that hypotension may have helped coronary occlusion is also not substantiated by the evidence. The only hypotensive value mentioned in the paper was SBP 70 mmHg. Later in the description it is stated “...due to persistent hypotension...”. In a young patient with no coronary disease such levels of hypotension are well tolerated. In addition, the patient suffered no other organ dysfunction (brain, kidney).

In conclusion, I still disagree with the pathophysiologic concept of the authors, as expressed also in
their response (point 1) “We believe that thrombotic occlusion, induced by vasoactive and inflammatory mediators released during anaphylaxis and facilitated by hemodynamic collapse, possibly on top of vasospastic reaction, was the causative mechanism….”. I would change the sentence that way: “We believe that a prolonged coronary vasospasm induced by vasoactive and inflammatory mediators released during anaphylaxis was the causative mechanism….”. In this respect I’m still missing in the discussion the most important point: What should be done in a patient like that? Nothing against an allergological evaluation, but the patient has to survive first. So the message that I would like to see conveyed in the paper is: this is not the “typical MI”, therefore whenever possible one should not apply the “typical” therapy (= lytics) (against point 4 response). It should be stated clearly that the strategy of choice would be an urgent cardiac catheterization. In fact only on the cath-lab table you will have the final diagnosis: stress-induced plaque rupture vs prolonged spasm vs thrombosis. Instead, I would like very much a sentence on how dangerous might be to perform an emergent cardiac cath in a patient who had (not-iodine-related) anaphylaxis. Any data in the literature?

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)
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Discretionary Revisions (which the author can choose to ignore)

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No