Author’s response to reviews

Title: Myocardial Infarction, Symptomatic Third Degree Atrioventricular Block and Pulmonary Embolism Caused by Thalidomide: a Case Report

Authors:
Shengyu Zhang (punchzsy@126.com)
Jing Yang (yj_pumch@126.com)
Xiaofeng Jin (punchjxf@126.com)
Shuyang Zhang (shuyangzhang103@126.com)

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Myocardial Infarction, Symptomatic Third Degree Atrioventricular Block and Pulmonary Embolism Caused by Thalidomide: a Case Report

Shengyu Zhang; Jing Yang; Xiaofeng Jin; Shuyang Zhang

BMC Cardiovascular Disorders

A. RESPONSES TO COMMENTS OF Reviewer1

No Questions Specified.

B. RESPONSES TO COMMENTS OF Reviewer2

Question 1: Authors suggest coronary artery spasm as a probable explanation of the AMI experienced by the patients: even if plausible, this hypothesis could have been validated by execution of provocative test, which, as authors already reported, was not performed. Moreover, when coronary angiography was performed, no coronary spasm was documented while ECG modifications were almost unchanged as compared to admission, which is an unexpected finding in the case of coronary spasm, in which usually ECG alterations tend to disappear with spasm resolution. This finding may lower the possibility of a spasm-related mechanism for AMI.
Answer: The reviewer’s comment was reasonable. Indeed, coronary artery spasm often causes symptoms and ECG dynamic changes that could be ST segment elevation (Prinzmetal’s angina) or depression or T wave abnormality. Moreover the ECG changes will often disappear with spasm resolution, which lasts for seconds to minutes. But if coronary spasms last for longer time and cause ischemic myocardial infarction, ST segment elevation will last for hours accompanied by elevated myocardial necrotic markers (eg. cTnI). As for this patient, though NO obvious coronary spasm was showed during angiography, cTnI elevated so profoundly that STEMI probably occurred, which might be the reason why his ECG alterations were persistent. The limitation was that for acute stage of myocardial infarction no provocative test was conducted and no direct evidence of coronary spasm was collected. So maybe persistent ST segment elevation meant STEMI caused by coronary spasm.

We have added “And the ST segment elevation was persistent even though no obvious coronary spasm observed during angiography, probably because of acute myocardial infarction (likely ST elevated myocardial infarction) caused by coronary spasm” in the DISCUSSION part to explain this question thoroughly.

Question 2: As thalidomide is associated with both arterial and venous thromboembolism, a thromboembolic origin of the AMI with spontaneous resolution of thrombus cannot be completely ruled out?

Answer: For myocardial infarction with normal coronary arteries, thromboembolic origin AMI was always included in differential diagnosis list and especially in this case for hypercoagulation state caused by thalidomide. Often thrombosis is formed at atherosclerotic site and seen during angiography, but may resolve spontaneously leaving almost no residual lesions. So this cause of AMI cannot be ruled out in this case. In this case, we had added aspirin and clopidogrel for anti-platelet and LMWH for anti-coagulation, so therapy was enough for thrombotic events.

We have added “Another possible cause for MI was thrombus formed in coronary artery and needed to be confirmed by coronary angiography. Often thrombosis is formed at atherosclerotic site and seen during angiography, but may resolve spontaneously leaving almost no residual lesions. So this cause could not be completely ruled out” in the DISCUSSION part to mention another possible clue to this case.

Question 3: Did any diagnostic exam was performed to exclude left-sided heart thrombi? We can also suppose that the same mechanism leading to pulmonary embolism was involved in the genesis of AMI: did a right-left shunt (i.e. PFO or inter-atrial defect) was searched to exclude paradoxical embolization of venous thrombi?
Answer: As reviewer had pointed out, left-sided thrombi or coexistence of venous thrombi and right-to-left shunt both could explain the AMI (acute embolism of coronary artery), and the latter could explain almost spontaneous pulmonary embolism and AMI. A TTE was ordered immediately after admission to CCU and demonstrated no left-sided heart thrombi or right-left shunt. For acute stage of myocardial infarction, we didn’t order TEE to rule out heart thrombi. Further cardiac MRI also confirmed that no thrombi existed in the heart. So an embolic event of coronary artery was less possible to happen. We have added “no evidence of left or right-sided heart thrombi or right-left shunt was found” in the Case Presentation part to specified this point more clearly and directly.

Question 4: what was time-dealy between admission and execution of coronary angiography?
Answer: It was a hour between patient’s presentation and emergency coronary angiography. It has been specified in the article.

Question 5: Did any interaction increasing thromboembolic risk can be supposed between thalidomide and cigarette smoking or statins?
Answer: We have searched the PubMed but found no evidence of interaction between thalidomide and smoking or statins, which would increase thromboembolic risk. Generally speaking, thalidomide causes hypercoagulable state via several means, while smoking damages endothelium and may correlate with thalidomide to accelerate thrombosis; meantime anti-inflammatory role of statins may paly a protective role against thalidomide. But no interactions among these factors have been reported so far and may needs further investigation.

C. RESPONSES TO REQUESTS OF Editor

We are sure that this article complies with editorial policies.