Author’s response to reviews

Title: Lower diastolic wall strain is associated with coronary revascularization in patients with stable angina

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Author’s response to reviews:
For starters, I am really appreciated and impressed your valuable review and I tried to modify my manuscript as much as you recommended.

I received a correction in English before submission, but I’m sorry I could not prepare it properly. I will attach an English proof certificate.

Thank you again for your excellent reviews and I am really happy that I could have chance for revision our manuscript.

Dear Ihsan Alur (Reviewer 1): Editor
I sincerely thank you for your sympathy and understanding for our research. I’ve made the most of what you pointed out. Below is my answer.
General comments:

1) accuracy stratified for gender -> The number of PCI patients was higher in men than in women (35% vs 21%, p=0.001), and the mean DWS was lower in men than women (0.35 ± 0.09 vs. 0.38 ± 0.10, p=0.001). However, mean DWS was significantly lower in the coronary revascularization group in both men (0.38 ± 0.08 vs. 0.28 ± 0.07, p<0.001) and women (0.42 ± 0.08 vs. 0.29 ± 0.10, p<0.001). I added this in the result section.

2) inclusion criteria better detailed -> I have described the inclusion criteria in more detail as you recommended.

3) was a sample size calculation performed -> Because this study was a retrospective observational study, we did not calculate the sample.

4) was a complete revascularization achieved? (quote on PMID: 28169217 ) -> Complete revascularization was confirmed in patients undergoing coronary revascularization including bypass surgery. I added this to the results section and cited the article.

David W. Leibowitz (Reviewer 2):

I sincerely thank you for pointing out the shortcomings of our research. There were some parts I thought but I had omitted, and I had not even thought about it. I tried to make up for the points you pointed out as much as possible. Below is my answer.

Major comments

1. 440 patients referred for angiography (which already introduces strong bias) for "the evaluation of chest pain and dyspnea" comprised the study population. This population is described as having "stable angina" but it is completely unclear on what basis this diagnosis is made. The fact that only 29% underwent revascularization suggests this was a diverse population. What were clinical characteristics of the complaints? ECG findings?
Non-invasive W/U such as stress tests, thallium scans, Ct angio? The first thing you pointed out is the beginning of this study. In actual clinical practice, patients are recommended to use stress test, thallium scans or CT angio in order to differentiate angina, but they may want to do the most accurate surveillance (often directly CAG) for insurance problems or other reasons (economically or physically). In fact, as a result of the review, it was less than 50% when CAG was necessary. So we started this study whether there was an echocardiographic parameters that could be checked once before CAG was performed or recommended. In this study, we compared patients who underwent CAG in patients suspected of clinically stable angina because other non-invasive tests were excluded as appropriate or ACS patients were both excluded.

2. If the aim of the study was to examine DWS as a predictor for the need of revascularization why not compare to other diagnostic modalities (such listed above) instead of echo measurements which (as the authors note) are insensitive for this purpose? And 3. The authors use of diastolic dysfunction as part of the "ischemic cascade" to justify the study is irrelevant in exams performed at rest without active ischemia. It was a very important point. Although our patients were stable angina patients without resting chest pain, our comparisons have sought to find differences in diastolic dysfunction between patients who truly need coronary revascularization and those who do not. Because, as mentioned above, ECG findings are mostly non-specific, depending on the insurance problem or the patient’s condition, many non-invasive tests are often not performed before the CAG is determined. So the real purpose of this study is to see if there is a role for echocardiography that can be checked once more before determining unnecessary CAG.

3. There is no information provided on the angio results and on the findings in the subjects not undergoing revascularization (normal coronaries/ distal disease?). The calculation of DWS was made using posterior wall segments. I would only expect this to be affected by coronary arteries supplying these segments (RCA or LCX). Was this the case? You pointed out a really important point. The angiography results were analyzed and tabulated in Table 4. As a result, LAD was identified as the most common target lesion.

Minor comments

1. Why did all patients have carotid ultrasound is this part of routine workup of chest pain in the authors institution? This is a very special part of our center, the echocardiography and carotid ultrasound are combined rather than echocardiography or carotid ultrasound
separately, and a code for prescribing them together is made at a lower in patients suspected of having atherosclerotic cerebrovascular or ischemic heart disease. There are some parts that are helpful to the patient, but it is true that there are parts where the carotid ultrasound is performed so as not to fit the clinical indications.

2. Figures 1A and B seen to depict different scales of the images which is confusing. -> I change it.