Reviewer’s report

Title: The association of sleep disordered breathing with left ventricular remodeling in CAD patients: a cross-sectional study

Version: 1 Date: 17 Apr 2017

Reviewer: Phyllis K Stein

Reviewer's report:

Abstract: This is a paper about association not causation. It is imperative that any suggestions of causation be removed. An example is the conclusion of the abstract where the phrase mild-to-moderate "increased" LV ... Even though in the second part of the conclusion you returned to "was associated with" this has to be the way all results are expressed. This is a cross-sectional study and there is no way to define causation or even the direction of causation.

Background: It is misleading to not include that fact that SA is prevalent among apparently healthy middle-aged and older adults as well, and cite some statistics about that prevalence.

You need to be clear about SA vs. SDB. The lack of clarity muddies the introduction. SDB includes OSA, obstructive hypopneas and central apneas. You are not being clear about what you are actually focusing on and the relationship of these to CV outcomes also needs to be focused on what YOU are studying.

Line 85. unclear what you mean by "targeted responses"

Line 93 "sleep abnormalities" Again not focused and not defined in the context of your study

Line 100 Again the word "consequence" implies causation and this is not acceptable.

Line 103 "more concentric left ventricle" ???? What are you saying/?

Methods:

Line 118 not consent needs to be changed to refusal to consent or something else that is grammatically correct

Line 122 "the several" Omit "the"

Line 122: PSG should be PSGs

Line 144 "almost similar" ? What does the qualifier "almost" mean?

Line 164: Physiological should be physiological
Line 169: Since you had such careful scoring, why did you not separately consider obstructive and central events?

Line 177: In case I did not say this later.... did you consider the known effect of gender on the ESS? Women are much less likely to have or report EDS.

Line 184: Echo.... blinded according to... should be "were blinded to the results of the PSG."

I am not an expert in echocardiography and therefore did not read the methods section for the echo in detail.

Statistics:

Line 224: "supposed clinical relevance" suggested??

Model characteristics:

I recommend a statistical consult. Many of the independent risk factors are actually overlapping clinically.

Results:

Clinical Characteristics

The first paragraph should be in a Table. Table 1 compares non-Sa and SA, but you could have a third column for all, if you want to describe the clinical characteristics of the study population. Do not write out this description in a paragraph. It is hard to read and hard to make sense of.

Although Table 2 compares patients with and without what is more correctly called OSAHS, the focus of the paper is on people with mild-to-moderate vs. no OSAHS. If you want the entire set of results could be put into a supplemental table, but basically, anything except the comparison of the two groups of interest is irrelevant and should not be in the main text..

No matter what you keep, do not repeat the contents of the table except where you are highlighting an important finding.

Line 245: comparing to male should be compared with male

Line 269---clinical characteristics by apnea severity... again, that is not what this paper is about and the contents of Table 2 do not need to repeated. Table 2 SHOULD be a comparison of no OSAHS and mild-to-moderate but even if you wanted to include everyone, the no OSAHS group would have to be in that table.
Notable also, the moderate and severe groups are relatively small and the intial presentation of the study as involving 772 CAD patients becomes misleading. I recommend a flow chart in the methods which shows how you went from the initial to the final cohorts.

Table 3 needs a N for the non-SA group.

Line 283: A little disingenuous to say that "as expected .." this is almost by definition of the groups

Discussion of Table 2. Even though, again, in the abstract, you describe the purpose of the study to be that association between SDB and LVH in stable CAD, the first aim was to fill in the gap of the possibility that asymptomatic SDB would be associated with LVH, this again reflects a lack of focus in this study. The proportion of people with severe OSA who had not been diagnosed was small and the more important finding is that, potentially, even people with recent ACS (which is a more specific way to characterize this population) with AHI<15 and no awareness of their SDB appear to have worse LV characteristics.

I will not continue to go over the results in detail except to say that you have to decide what this paper is really about and then focus on that. Clearly, my opinion is that the info about more severe SDB is not novel and the info about mild SDB is.

It is kind of frustrating to jump back and forth between comparing SA and non-SA and the other aspects of the analysis. I am not sure you have enough females to say anything when you look at AHI<15 vs AHI <5 but I am not going to try to figure that out.

Discussion:

Were these patients only "stable CAD" or were they all 2-week post ACS and stable. That would be different.

Line 390: not predicts.... is associated with

Line 394: The effect of SA on LVH risk is fully realized... again implies causation when that has not been show. This could be bi-directional and LVH risk is not meaningful here.

Line 403: Our results discovered.... please correct Our results suggest..And AGAIN this is not causation, this is association and you imply, by using the word effect, that it is causal. It could be, but you cannot show that in this study.

Line 415 to 420: Although this is an attempt to compare the prevalence of undiagnosed SDB (and here again you are muddying SA with OSAHS) in your population with those in the
literature is totally muddy. You found 39%. Surely you can find a study that is well done to compare it to. It is meaningless to report a range of 26% to 60%. It adds no clarity whatsoever to this discussion.

Line 422: correct the syntax.

Actually the whole paragraph needs to be clarified with correct English and a thought to what you are trying to say. It might be possible to create a table but this is basically an undigested recitation of the results of prior studies without actually and coherently putting your study into context.

The next paragraph is no more helpful although I appreciate that you are trying to discuss your findings.

I give up on the discussion at this point. It is too long and again not focused. Maybe, for your own purposes, you can diagram the logic of it and it would help you. It is also completely irrelevant if you limit your study to the novel finding of the association of mild to moderate OSAHS with LV remodeling. Then you do not have to review the entire literature on various studies of SDB and of factors that influence LV remodeling. Perhaps this was a PhD thesis study, I don't know, but right now you have both a research result and a disorganized review of the literature.

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

No

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

No

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

No

**Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?**
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I recommend additional statistical review
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Needs some language corrections before being published

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