Reviewer’s report

Title: Association between Metabolic Syndrome and Knee Osteoarthritis: A Cross-sectional Study

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Reviewer: Alice Courties

Reviewer's report:

This is a cross-sectional study evaluating the association between metabolic syndrome and knee osteoarthritis in a large Chinese population. The authors found that metabolic syndrome was associated with radiographic knee OA, and especially osteophytes, regardless of age, sex, activity level, smoking and alcohol consumption, educational level and hsCRP. They used two definitions of metabolic syndrome to increase the power of the study.

The association between MetS and knee OA is largely published and sometimes with negative results. However, this is the first study in a large Chinese population which have not the same definition for metabolic syndrome especially due to the difference in fat/weight analysis. Furthermore, the authors adjusted for some important confounding factors (i.e., activity level).

Minor comments:

- Abstract: Specify abbreviations of OSP and JSN in results before using it in conclusion for a better understanding.

- Did the Xyangya Hospital Health Management Center Study is a prospective cohort? It is not clear how the patients were selected. The X-ray was made because patient reported pain or as a standard procedure? Biological and clinical evaluations were made before inclusion? A flow chart could help to better understand the selection of population.

- Line 105 page 4: remove the "e" before 40 years.

- What was the intra and inter reader reliability for X-Ray scoring?

- Did the authors evaluate the pain and the function of knee OA? It could be interesting to know if metabolic syndrome was also associated with knee pain? As well, did the authors look for an association between metabolic syndrome and radiographic severity?
- The authors found that metabolic syndrome and knee OA were associated regardless of hsCRP and concluded that low grade inflammation should not be the link between the both conditions. However, what was the baseline hsCRP in the two groups? Please add in Table 1. Did the authors found any difference in hsCRP between metabolic syndrome and non-metabolic syndrome patients? I think this conclusion should be moderate because hsCRP is not the only marker of low-grade inflammation state in metabolic syndrome.

- Using the second definition of Metabolic syndrome, the NCEP-ATPIII, the authors found that knee OA and MetS were associated regardless of BMI which is an important results as some think that the association between MetS and OA is only mediated by weight. The authors should support it in the discussion.

- Table 4: In the title, there is a typing mistake, it is "OSP" and not "OST".

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

Yes

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

Yes

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

Yes

**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 am able to assess the statistics

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