Author’s response to reviews

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

Authors:
Dong-xing Xie (491703175@qq.com)
Jie Wei (394345006@qq.com)
Chao Zeng (zengchao19880505@sina.com)
Hui Li (397969391@qq.com)
Tuo Yang (693673464@qq.com)
Yi-lun Wang (327634570@qq.com)
Hui-zhong Long (346654946@qq.com)
Zi-ying Wu (1395682494@qq.com)
Yu-xuan Qian (290713121@qq.com)
Kang-hua Li (1243532466@qq.com)
Guanghua Lei (lei_guanghua@csu.edu.cn)

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Replies to Editor:

Editor Comments:

Comment 1: BMC Musculoskeletal Disorders operates a policy of open peer review, which means that you will be able to see the names of the reviewers who provided the reports via the online peer review system. We encourage you to also view the reports there, via the action links on the left-hand side of the page, to see the names of the reviewers.

Response: We have also viewed the reports through the online system.
Replies to Reviewer 1 (Karine Louati):

Comment 2: I congratulate the authors on this interesting work. It is a well written and clear article. The association of knee osteoarthritis and the MetS is a topical issue. Here the authors have wanted to confirm this association in the Chinese population. I have just only minor suggestions or remarks.

Response: Thank you so much for your professional comments.

Comment 3: In the material and method section, the authors list the inclusion criteria (line 105 to 110) and after, line 110 to 119, they list the number of patients who meet these criteria one by one. It would be more consistent to be given directly the number of patients meeting the whole inclusion criteria.

Response: As you suggested, we have modified the materials and methods section. (Materials and Methods section, line 115-125, page 4,5)

Comment 4: The diagnosis of osteoarthritis is based on radiography, which is common in studies. However, it should be specified in the material and method section that pain has not been taken into account and it must be discussed in the "limits" paragraph.

Response: Done accordingly. (Materials and Methods section and Discussion section, line 137-138, 309, 310, page 5, 11)

Comment 5: I think it would be more understandable to put the both MetS definitions in the "Assessment of MetS". The authors can also add to the "strenghts" that they used several MetS definitions.

Response: Done accordingly. (Materials and Methods section and Discussion section, line 150-157, 314-315, page 6, 11)
Comment 6: In the discussion, it would be preferable to position "limits" before "strenghts". The authors have used good references with usual cohorts on the subject (KHANES, NEO, ROAD).

Response: Done accordingly. (Discussion section, line 306-320, page 11)

Comment 7: Is it possible to have data on the association of osteoarthritis and treatments taken for the different elements of the metabolic syndrome? (For example, does OA is less frequent if the patients having treatments for hypertension, diabetes and dyslipidemia?) And data on traumatic or surgical factors as confounding factors?

Response: Thank you very much for this point. According to the data we collected, knee OA is less frequent if the patients having treatments for hypertension (p = 0.001), but not for diabetes (p = 0.491) and dyslipidemia (p = 0.278). Honestly, we intend to use the data to explore the association of knee OA and treatments taken for the different elements of the metabolic syndrome in another study, so that we can analyze the data more completely. Besides, data on traumatic or surgical factors was not available in the present study. However, most of previous studies examining the association between MetS and knee OA also did not include traumatic or surgical factors as confounding factors [1-4].

References


Comment 8: In opening, it could be proposed to explore the association between hand osteoarthritis and MetS, because it is a non-bearing joint.

Response: Thank you very much for your advice, and that is what we want to do in the next step.

Replies to Reviewer 2 (Alice Courties):

Comment 9: 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).

Response: Thank you so much for your professional suggestions.

Comment 10: Minor comments:

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

Response: Done accordingly. (Abstract section, line 46, 47, page 2)
Comment 11: Did the Xiangya 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.

Response: The Xiangya Hospital Health Management Center Study is not a prospective cohort but a cross-sectional study. The X-ray was made as a standard procedure and biological and clinical evaluations were made before inclusion. We have modified that section and make it easier to understand. (Materials and Methods section, line 115-125, page 4,5)

Comment 12: Line 105 page 4 : remove the "e" before 40 years.

Response: Done accordingly. (Materials and Methods section, line 107, page 4)

Comment 13: What was the intra and inter reader reliability for X-Ray scoring?

Response: We have added the kappa coefficient in the “Assessment of radiographic knee OA” section. (Materials and Methods section, line 132, 133, page 5)

Comment 14: 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?

Response: Thanks for your thoughtful comment! We have added results of association between metabolic syndrome and radiographic severity of knee OA in the manuscript. However, we did not evaluate the function or pain of knee OA, so we cannot examine if metabolic syndrome was also associated with knee function or pain in the present study. (Results section, line 246-248, page 9)
Comment 15: 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.

Response: We have added the hsCRP level of the two groups in Table 1, and no difference was found. Besides, hsCRP in metabolic syndrome patients (3.09±6.43) was higher than in non-metabolic syndrome patients (2.16±5.05) (p= 0.003). Indeed, hsCRP is not the only marker of low-grade inflammation state in metabolic syndrome, and we have moderated the conclusion. (Table 1, Results section, line 293-295, page 10)

Comment 16: 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.

Response: We have supported it in the discussion. (Results section, line 295-303, page 10, 11)

Comment 17: Table 4: In the title, there is a typing mistake, it is "OSP" and not "OST".

Response: Done accordingly. (Table 4)

Special thanks to the Editors and Reviewers for their good and professional comments.