**Reviewer’s report**

**Title:** Polycystic ovary syndrome is a risk factor for sarcopenic obesity: A case control study

**Version:** 1  **Date:** 07 Feb 2019

**Reviewer:** Mohd Ashraf Ganie

**Reviewer's report:**

Reviewer comments

The manuscript submitted by Mc Breairty E et al is a trying to address an important area of PCOS suggesting that women with PCOS have a high prevalence of sarcopenic obesity, that can be correlated to insulin resistance and inflammation. However, there are several serious concerns to be addressed before considering it for publication. My views are as follows:

a)  **Abstract**

a. The PCOS subjects and controls have been taken from heterogeneous population which will have impact on the results as different ethnic groups have different built which will in turn effect appendicular muscle mass.

b. It is also not clear as to how the sample size was calculated?. Sample size of 68 appears small to reach a definite conclusion.

c. Age range of 18-35 could have been categorized as they have evaluated the group together which will give erroneous results as the muscle mass of 18-year old PCOS subject will be different when compared to 35 year old PCOS subject, appendicular muscle mass is negatively correlated with age.

d. Result in abstract mentions that skeletal muscle mass was correlated positively with vitamin D, where as vitamin D levels were not done in control group of subjects, we cannot assume vitamin D levels in controls and correlate it without assessing the Vitamin D levels.

b)  **Introduction:**

a. Line 2 prevalence of PCOD is given for the pre menopausal women. Why was age group limited between 18-35 as it may limit generalization of results.

b. Appendicular muscle mass correlates negatively with markers of inflammation. Why in the present study analysis of the inflammatory markers was not done in control group, so difference of inflammatory markers between PCOS and controls and its effect on the appendicular muscle mass cannot be assessed
c) Methods:
Controls were not fully evaluated, testosterone and Ultrasound was not done to rule out hyper androgenic state.

a. Details of control recruitment has not been mentioned as to how it was done (Line 60)

b. A diagnosis of pcos was excluded. 'can be rephrased as 'PCOS with following conditions were excluded from the study'. Line 70

c. PCOS were diagnosed on the basis of irregular cycles and radiological evidence of more than 25 follicles per ovary. Which criteria were fitted? Why testosterone levels were not done for the PCOS subjects (Line 65). Besides androgens especially testosterone have significant relevance to the muscle mass.

d. Statistical analysis may need review and isuggest a professional methodologist or statistician to give his /her comments.

d) Results:

a. Correlations of appendicular skeletal mass was done in both sarcopenic and non sarcopenic obese, however there is no mention of any such correlation of appendicular skeletal mass in control group (Line 115). So we cannot correlate the results between PCOS subjects and controls.

b. Again HOMA and hsCPR was only done only in PCOS subjects whereas it was not done in control group, so we cannot assess the effect of inflammatory markers on sarcopenic obesity when we do not have the inflammatory markers controls for comparison (Line 131).

c. Vitamin D levels were insufficient in the PCOS sarcopenic obese group which will have negative effect on appendicular skeletal mass calculation (Line 134). It is confounder.

e) Discussion:

a. As already mentioned (Line 159) healthy female control group was not evaluated as expected.

b. In the study it is assumed that sarcopenic obesity is associated with PCOS because of high levels of inflammatory markers, while in the present article there is no mention of inflammatory markers in control group, which could have given us a better outlook to how inflammatory markers have effect on sarcopenic obesity in PCOS subjects (Line 171).
c. Similarly the conclusion that higher waste circumference is associated with sarcopenic obesity can not be drawn as there is no mention of waist circumference in control group for comparison of the same (Line 204).

d. PCOS was not ruled out in control group (Line 219) as required baseline investigations were not done.

General comments

1. There are many typos errors and language needs to be improved.

2. References can be updated.

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.

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