Reviewer’s report

Title: Comparison of glycemic control and β-cell function in new onset T2DM patients with PCOS of metformin and saxagliptin monotherapy or combination treatment

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Reviewer: Akinobu Nakamura

Reviewer’s report:

Authors compared the effects of metformin and saxagliptin monotherapy and metformin and saxagliptin combination therapy on blood glucose, HbA1c and beta cell function in the newly diagnosed T2DM women with PCOS. This study showed that the glucose-decreasing effect and beta cell function improvement of saxagliptin was similar to those of metformin in newly diagnosed T2DM patients with PCOS, and that the reduction of HbA1c was significant in combination group compared with monotherapy. Although these results are interesting in essence, there are many points which should be addressed for publication in this journal.

Specific comments

Criticism 1: (Introduction) "Our previous study [5] showed that early impaired beta cell function was detected in PCOS women." The reference [5] described the presence of AMPK in rat ovaries. This citation could be inaccurate.

Criticism 2: (Methods) How was the sample size determined in this study? There is no information about sample size estimation.

Criticism 3: (Methods) Why was the dose of metformin 1500mg/day in the combination group in spite of the dose of metformin 2000mg/day in the metformin monotherapy group?

Criticism 4: (Methods) Statistical analyses of individual comparisons among more than 2 groups should be performed using multiple comparison technique

Criticism 5: (Results) Authors indicated that the decline of HbA1c was significant in combination group compared with monotherapy groups. Please explain the mechanism of the difference of HbA1c reduction more clearly.

Criticism 6: (Table 2-5) I do not understand the mean of many "*" and "**". What data do you compare? Please explain more specifically.

Criticism 7: (Discussion) Line 263-264. Regarding the decline of sex hormone levels, why did authors describe the decline in WC and WHR in this sentence?
Criticism 8: (Discussion) Line 280-287. Authors stated the association between incretin secretion/activity and PCOS. How about the data of GLP-1 and GIP levels during OGTT in this study?

Criticism 9: (Discussion) Line 296-299. Although authors stated as follows; "In accordance with our result, they also found that combination treatment better improved IS-SI in prediabetic women with PCOS.", did insulin secretion better improve in the combination group than that in the other groups in this study?

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.

Yes

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 am able to assess the statistics

Quality of written English
Please indicate the quality of language in the manuscript:

Acceptable

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