Reviewer's report

Title: The effects of treatment with liraglutide on atherothrombotic risk in obese young women with polycystic ovary syndrome and controls: a case control study.

Version: 2  Date: 25 November 2014

Reviewer: Joanna Stewart

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Major
1. The design of this study is unusual in that there is no control (without liraglutide) to be able to assess whether any change in outcomes is likely to be able to be attributed to treatment. The question being investigated is whether there is evidence that the effect of liraglutide differs in the those with and without PCOS. This is the only question that can be answered with confidence from this design. This needs to be made clearer in the discussion.

2. Calling this study a case control study is confusing. It is a study with 2 groups – one with PCOS and one without. While you may wish to refer to these as cases and controls a ‘case control study’ by convention, is a retrospective study where cases with some outcome are identified and controls, without this outcome are selected to compare with the cases on previous exposures. As this is not what is meant by ‘a case control study’ as is in the title and also throughout the text this terminology should be changed. For the title it can simply be dropped.

3. It is not clear what is meant by ‘age and weight matched controls’. As there are different numbers in the PCOS and non PCOS group I assume this was not one to one matching (which would require an analysis taking this into account). If what was done was to select a group with a similar age spread and weight as the PCOS group, rather than using the word matched this needs to be stated (and how it was achieved).

4. Some comment should be included in the discussion about the inability to assess the change over time, because of the lack of control, and the likely effect of regression to the mean at least when looking at weight change in this group selected to have high initial weight.

The data would have been more appropriately analysed with both time and group in the one analysis, investigating the interaction and if it did not exist then looking at the overall time effect. However as the main question was the difference in change (the interaction) and as the test done satisfactorily answers this question I am not suggesting that the data be reanalysed.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable
Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests: I declare that I have no competing interests