Reviewer's report

Title: Differences in pregnancy outcomes and characteristics between insulin- and diet-treated women with gestational diabetes

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Reviewer: Kerstin Berntorp

Reviewer's report:

This is an observational retrospective study comparing outcomes and characteristics between insulin-treated and diet-treated women diagnosed with GDM (Carpenter and Coustan criteria) during the years 2010 to 2013 in two large obstetrical centers in Belgium. Based on the findings it is concluded that insulin did not prevent adverse outcomes, as rates of LGA and cesarean sections were higher in insulin-treated women, and not unexpectedly, they had a higher over-all risk profile. Due to the retrospective non-randomized design the study does not answer the question why insulin did not improve pregnancy outcome, which is a clear limitation. However, the paper is well written and fairly well described. Evaluation of OGTT-derived measures of insulin secretion and insulin sensitivity is a strength and somewhat adds to the understanding of the problem.

Some specific limitations are listed below:

1. Methods, line 109: It is referred to the Fifth International Workshop Conference criteria but not all readers may be aware of these since criteria differ world-wide. It could be understood that the glucose challenge test was offered to all women, but when in gestation? A difference is obvious from Table 2 and raises the question whether there were special indications for earlier or later CTG? It would also be more informative if 50g is added “Women received a 50g glucose challenge test (CTG)”.

2. Methods, line 156-162: It could be understood that the HbA1c is reported as NGSP (%) but this should be clarified. Since there is a world-wide agreement on reporting HbA1c according to the IFCC-reference system (mmol/mol) the corresponding value for IFCC (mmol/mol) should be added.

3. Results, line 193-194: Since fasting glucose levels predicted insulin treatment (according to multivariable regressions, line 228) it could be expected that some women only had fasting hyperglycemia and in need of long-acting insulin alone. It would therefore be of interest to clarify how many women received short-acting insulin alone, long-acting insulin alone, or both.

4. Results, line 201-202: Add mg/dl after glucose levels line 201, as well as the corresponding value for mmol/l since many countries report according to the SI system and readers may not be familiar with values in mg/dl. The same refers to HbA1c line 202, give % as well as mmol/mol. The same refers to Table 2, which indeed lacks information on mg/dl after the respective fasting, 1-h, 2-h, 3-h glucose variable as well as % after HbA1c in the first column. Values of the
corresponding mmol/l and mmol/mol in parenthesis after the respective glucose and Hba1c level is suggested to be added.

5. Results, line 228-234: The multivariable regression analysis should be more clearly described. In methods, line 169-171, it is described that the clinical variables most significantly associated with the need for insulin in univariable analysis were included in the multivariable logistic regression analysis, but which were they? It is suggested that Table 3 is replaced by a table showing the results of the univariable and multivariable analyses and that the information in the present Table 3 is given in the text alone.

6. Discussion, line 261-279: This information is not especially relevant for the present study which does not include women on other drugs than insulin. This section could be shortened down, only including information relevant for the study, such as that metformin might have a positive effect on weight gain in these women.

7. One or two sentences could be added on line 300 discussing the clinical implications of the present findings of fasting glucose levels as predictors of insulin treatment with an optimal cut-point of 88.5 mg/dl (4.9 mmol/l), close to the IADPSG cut-off. Does this change anything considering indications for insulin treatment (now fasting level 95 mg/dl or 5.3 mmol/l)? How about the corresponding 2-h level (120 mg/dl or 6.7 mmol/l)?

8. Discussion, line 314-320: In what way is this information relevant for the finding presented on line 2013-214, that less than one third had abnormal fasting glycemia while 2-h and 3-h glucose levels were more frequently abnormal? Does the 3-h value add anything concerning insulin treatment and outcomes?

**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.