Reviewer's report

Title: Association of Decreased Early Pregnancy Serum Brain-Derived Neurotrophic Factor (BDNF) Concentrations with Antepartum Depression

Version: Date: 9 February 2015

Reviewer: Ann Manzardo

Reviewer's report:

Major Compulsory Revisions
1. The study utilizes an interesting approach validated by Hsieh et al. to calculate the odds of antipartum depression at decreasing BDNF levels in quartiles. The approach is innovative and valid at face but the method of generating quartiles assumes a normal distribution of BDNF levels which was not clarified in the study methods. Similarly, mean comparisons using ANOVA also require a normal distribution of BDNF levels. This detail needs clarification in the methods section. If BDNF levels are NOT normal than a log transformation is needed which would likely strengthen the observed association and potentially increase significance and value of the work.

2. There is an established association between both depression and BDNF levels with obesity which should be reviewed and discussed as early pregnancy BMI was a significant confound in the study.

3. Similar to BMI, the potential influence of maternal age and nulliparous as well as the planned nature of the pregnancy on mood and BDNF levels should be considered and discussed as they reflect significant physical and psychosocial stressors and confounding influences on study outcomes. Nulliparous was significantly overrepresented in the low quartile group which may reflect physiological changes associated with fetal loss that may or may not be influencing mood. Current presentation of the study data and findings do not adequately account for the inherent complexity in the data which likely undermine outcomes such as depression severity.

4. Additionally, it's important to make note of tissue specific influences when using blood levels of any biomarker to assess neurological and/or behavioral outcomes. There is always the concern that blood levels are not representative of brain levels or reflective of brain activity. This should be acknowledged as a limitation.

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.