Reviewer’s report

Title: The effects of spinal anaesthesia for elective caesarean section on uterine and umbilical arterial pulsatility indexes in healthy and hypertensive pregnant women: an observational study.

Version: 1 Date: 20 April 2014

Reviewer: Yehuda Ginosar

Reviewer’s report:

You should be congratulated for a study with a large number of subjects and has been carefully done.

Major essential:
You need to identify better why your paper is novel. I think you erred by missing out looking at preeclampsia, only chronic hypertension, which I think is a big shame as this is the group that previous research suggests to have the biggest difference from normal pregnancy, while chronic hypertension and normal pregnancy had little differences when you look at % change from baseline in these ultrasound indices. Please include discussion of the relevant literature (see below). Please shorten the intro and discussion and bibliography - make it more focussed and relevant to the specific question.

Minor essential:
Please ammend the title to specify normal pregnancy and chronic hyptertension.
L62 Bupivacaine and sufentanil are not proper nouns and do not need capital letters in the middle of a sentence.
L79. A major challenge …
L79. I disagree with this sentence. There are two separate disease entities here – a) chronic hypertension which may or may not have superimosed preeclampsia/ PIH and b) pre-eclampsia / PIH in a previously healthy patient. The use of the word "superimposed" implies the forer, whereas the latter is probably more common, depending on maternal age, parity and other risk factors.
L83. Over the last X period of time …
L84-89. Not sure how relevant this entire passage is for the paper. Consider removing or shortening it.
L89-94. Also superfluous; this is not an OB anesthesia review.
L98 neuraxial blockade
L99 occur or result rather than establish
L100-103 I think you must mention here the study by Ramos Santos et al: The effects of epidural anesthesia on the Doppler velocimetry of umbilical and uterine
arteries in normal and hypertensive patients during active term labor. Obstet Gynecol. 1991 Jan;77(1):20-6. Like you, they found that uterine artery impedance (there the SD ratio) fell while the umbilical artery impedance was unchanged. However, unlike your study, this finding was observed only in women with preeclampsia. By comparison, women with chronic hypertension and normal pregnancy had no changes in either umbilical or uterine artery. This study is critical for both the introduction and the discussion. This is a well-known, classic study and should have provided the background to yours and your results should be interpreted with reference to it. This was an epidural analgesia rather than a spinal anesthesia study, but it deals with sympathectomy. There are other early studies also from Alahuhta's group from Finland and others.


Plus a whole load of normal pregnancy studies:


The point I am trying to make is that you should demonstrate what your study offers that is different from these earlier studies.

L130 To what does [N/ REF.ª 133/10(086-DEFI/126-CES] refer?

Was the study registered with a registry like clinicaltrials.gov of NIH?

L132-6 Can you make this two or more sentences – here the verb is four lines after the start of the sentence. May be easier just to write: "Inclusion criteria were: … "

L137-143 Better to write: "Exclusion criteria were: … "

L167 Not critical, but why L2/3 as routine? We miss diagnose this level frequently (Bromage).

L170 Please specify if this was hyperbaric or isobaric bupivacaine.

L175 At what time was T4-6 sensory level required?

L176 Please specify by what method BP was assessed. It seems as if this was
by manual auditory sphygnometer technique rather than using automated oscillometric technique. Please confirm and explain the reason.

L183 Why ephedrine? Ngan-Kee's research and others have demonstrated very well that phenylephrine or a similar alpha-agonist is associated with less fetal acidosis and is the drug of choice. This point is not critical to the study but will irritate any OB anesthesiologist reading this paper.

L187 Uterine artery blood flow can be quite difficult to assess transabdominally in many women — particularly in obese women. It typically takes time. Here you measured it bilaterally, as well as umbilical artery (easier). This is fine for baseline but to what degree did this affect the timeline of your second measurement?

L214 Please expand on this sentence — I do not understand it. I am not sure why you used modelling and I am going to have to ask for a statistical consult to check this approach.

L272-277 Probably better to include a CONSORT-like flow chart (even though this was no a randomized trial).

L283 …were non-smokers.

L285 Weeks do not require 2 decimal points.

L286 If you state that something is statistically significant, please present the data in the text (means, mean difference, 95% CI, p-value).

Table 1. Some demographic variables surprise me, like menarche, 1st sexual intercourse, educational level. What was the rational for these factors?

Figure 2. Does not look a particularly impressive effect on uterine artery PI after spinal anesthesia. Am I missing something? As you used paired t tests, why not represent the data graphically as % change from baseline for NT vs HT groups (as bars).

The discussion is far too long. It should focus on two areas a) limitations of the study results in view of the methodology and b) interpretation of the results in the context of relevant literature. Less is more.

L364 "…. e pregnant…" In this era, an e pregnancy sounds appealing but I guess this is a typo.

L371. But you did not assess severe preeclampsia or preeclampsia, rather chronic hypertension, probably a very different entity.

General points.

1. Is the question posed by the authors well defined?

   Adequate

2. Are the methods appropriate and well described?

   I think the modelling is unnecessarily complicated and have requested a statistical consult.

3. Are the data sound?
I think that the raw ultrasound data seems well done, although the timescale of the post anesthesia assessment is unclear to me.

4. Does the manuscript adhere to the relevant standards for reporting and data deposition?
   No data registration with NIH / other registry.

5. Are the discussion and conclusions well balanced and adequately supported by the data?
   Far too long a discussion. Not a good discussion of limitations.

6. Are limitations of the work clearly stated?
   Not adequately discussed; eg chronic hypertension versus preeclampsia; difficulties of uterine artery; modelling;

7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished?
   Need to cite Ramos-Santos who did the same study in 3 groups (chronic hypertension, preeclampsia and normal – only found diffs between preeclampsia and other groups; no diffs between chronic hypertension and normal).

8. Do the title and abstract accurately convey what has been found?
   Title does not mention chronic hypertension and does not mention normal pregnancy (vast bulk of patients).

9. Is the writing acceptable?
   Yes.

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

**Quality of written English:** Acceptable

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I declare that I have no competing interests