Reviewer’s report

Title: Inter and intra-reliability of ultrasonography for the measurement of abdominal subcutaneous & visceral adipose tissue thickness at the 12 weeks gestation

Version: 1 Date: 29 Sep 2019

Reviewer: Maria Pilar Aparisi Gomez

Reviewer's report:

Thank you very much for the author's response and comprehensive revision.

As a note to the authors' response I would like to clarify points 3 and 4 in my comments were meant to be read and understood together.

"A limitation to the relevance of this study is that in its design the population of women selected are in their 12th week of gestation. At this stage of pregnancy, even though some physiological changes are established, changes in body composition are more likely to be qualitative than quantitative. In this respect, the assessment of body composition achievable with US at 12-week gestation is very likely to be comparable with baseline body composition (baseline measurements of thickness of these compartments), and in that respect, practically the same that they would be in standard non-pregnant population. Inter and intra reliability for the measurement of subcutaneous and visceral adipose tissue thickness on ultrasound in a baseline status has already been determined. To add validity to your study, it would be recommended to explain how your results compare to published evidence, and potentially elaborate on the factors that could modify these parameters in pregnant women at this gestation."

The impact of obesity in pregnancy, the limitations of other techniques and the importance to determine the accuracy of measurements on ultrasound are perfectly understood. I am afraid the comment received a slightly different interpretation to the intended one. I would like to clarify there was no doubt or question on this respect (as per answer to point 3).

However, I would like to thank the authors for the thorough explanation and for the response and the addition to the text, which effectively replied to my question, which was directed towards how your results compared to other studies, whether the quantitative difference could already be expected and what was the evidence that supported performing measurements at this stage and not later in pregnancy for example. I think your response reinforces the purpose and validity of your study.
Regarding the your comment:

"The idea of measuring women at 12 weeks is that clinically this is a time at which women attend antenatal visit to the maternity hospital and undertake an ultrasound scan to check foetal growth, amniotic fluid volume and foetal anatomy. It therefore presents a special opportunity of healthcare contact which could be utilized effectively."

And the paragraph added to the discussion:

"The end of the first trimester (12 weeks gestation) is a clinically significant clinical time-point, at which women attend routine antenatal appointments to the maternity hospital to undertake various medical observations including an ultrasound scan to monitor foetal growth, amniotic fluid volume and foetal anatomy. It therefore presents a special opportunity of contact with healthcare which should be utilized effectively and efficiently to identify women at higher risk in order to improve management of disease."

I think it would be interesting to clarify that as per fetal medicine foundation guidelines, the scan performed at 11-13 weeks has the purpose of measuring the nuchal translucency, examine fetal nose and palate, measure fetal heart rate and eventually assess the flow of blood through the tricuspid valve and ductus venosus.

Only a crown-rump length and biparietal (BPD) measurement is taken. It assesses growth but in a very limited way - it does in the sense that it confirms dating. Normally, the volume of amniotic fluid is not measured as a separate data (only visual assessment).

The scan can rule out major fetal abnormalities, and it can also be used to identify women at increased risk of developing preeclampsia. To perform the nuchal measurement and combined first trimester screening (MSS1), the CRL of the fetus has to be 45 to 84 mm in length. At this size, anatomical evaluation is limited as well.

Normally, a second trimester scan is performed (week 20), and it is at this stage when the fetal anatomy is assessed. Also, this is the stage at which a first complete set of growth parameters is obtained, to plot in population and customized charts. The deepest pocket of amniotic fluid is also obtained.

With these first growth parameters is how we obtain an idea of how the fetus is growing - this is the first true growth scan.
When the patient is first booked - early pregnancy, beginning of first trimester, generally before the 11-13 week scan, comorbidities and pregnancy history is taken. Gestational diabetes testing is done in the second trimester (24-28 week).

At this stage, the patients with existing comorbidity have been diagnosed already (at the time of booking) and patients that will potentially develop complications like gestational diabetes or preeclampsia de novo have not been tested. The strength of the studies directed towards measuring body composition in early pregnancy is to establish prediction factors that will help in the detection of patients at risk of developing the complications - to be able to start to act before week 20 - which is when we will first realize a fetus is small, or week 24, when gestational diabetes is tested, for example.

I would recommend to review this added paragraph, as it gives a wrong idea.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

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