Diagnosis, Management, and Evaluation of Hypertensive Disorders of Pregnancy

To the Editor:

We read with great interest the recent clinical practice guideline, “Diagnosis, Evaluation, and Management of the Hypertensive Disorders of Pregnancy.”

The authors implied that the abnormal uterine artery Doppler velocimetry is one of the risk markers for preeclampsia in the second or third trimester and that its abnormality is practically defined at 22–24 weeks as bilateral notching with mean resistance index (RI) > 0.55 (i.e., > 50th centile), unilateral notching with mean RI > 0.65 (> 90th centile), or no notching with mean RI > 0.70 (> 95th centile).1 We agree that these three indices are very good predictors of preeclampsia.2 However, we do not share the view that the resistance index and its combinations with notching are the most predictive indices of the uterine artery Doppler velocimetry for the development of preeclampsia. The cited study does not compare the predictive capacity of the mentioned three indices with the other indices of the uterine artery Doppler velocimetry.

According to a recent meta-analysis,3 the best predictor of preeclampsia in the second trimester of pregnancy is the pulsatility index (PI), alone or combined with notching. The positive likelihood ratio for PI with notching is 7.5 (95% CI 5.4–10.2) for the patients at low risk or unspecified risk, and 21.0 (5.5–80.5) for the high-risk patients. The respective values of the positive likelihood ratio (95% CI) for the RI (> 0.70 or 95th centile) and notching are 5.6 (3.1–8.1) and 4.1 (1.5–6.7).

These results demonstrate the superiority of the predictive capacity for preeclampsia of the PI and its combinations with notching over the RI combined with notching. This is not surprising since the PI takes into account the mean velocity, and therefore the shape of the waveform, as compared to the RI which is only calculated with the minimum and maximum velocity.

We propose that the criteria for definition of an abnormal uterine artery Doppler velocimetry defined at 22–24 weeks be based on the pulsatility index and its combination with notching.

We would like to thank the authors for their very thorough review and recommendations regarding hypertensive disorders during pregnancy, which are a significant cause of perinatal mortality and morbidity.

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REFERENCES

In Response

To the Editor:

We would like to thank Dr Aleksandrov, Dr Fraser, and Dr Audibert for their comments on the recently published guideline, “Diagnosis, Management, and Evaluation of Hypertensive Disorders of Pregnancy.”1 We welcome the opportunity to respond to their concerns about our definition of abnormal uterine artery velocimetry in women at risk of preeclampsia.

In their letter, they suggest that a raised uterine artery pulsatility index (PI) (with or without notching) is superior to an elevated resistance index (RI) (with notching) in the prediction of preeclampsia in women at high and low risk. This is based on the recent publication of a meta-analysis by Cnossen et al.2 We welcome discussion of this new information, which was not available to us when we completed the guideline (or when it was published in March 2008).

Certain aspects of this meta-analysis by Cnossen et al.2 deserve to be highlighted before concluding confidently the superiority of one measurement (PI) over the other (RI).
First, there were a limited number of studies on which the conclusions were based. Among women at low (or unspecified) risk of preeclampsia, only two studies evaluated the predictive ability of PI or notching, and only one study evaluated PI and notching. Among women at high risk of preeclampsia, only one study evaluated PI or notching and one PI and notching. Generalizing these findings into a firm clinical standard at this time is likely premature.

Second, there were methodological issues that warrant discussion. The cut-off points for abnormal PI varied from study to study, the timing of Doppler measurements was heterogeneous, and the methods used to obtain the Doppler waveforms were largely unreported. This lack of standardization of both ultrasonographic Doppler technique and definition of an abnormal velocimetry index is of sufficient concern that it is difficult to reach a firm conclusion for clinicians.

Third, the authors of the meta-analysis, in response to a letter from Dr Conde-Agudelo and Dr Lindheimer, state, “We do not think that firm clinical recommendations should be made on the basis of what might be called early-phase diagnostic studies or meta-analysis thereof.” We agree.

We also agree with Cnossen et al. that future research should concentrate on a combination of tests, which they astutely point out is what clinicians do every day. Uterine Doppler velocimetry is a promising test for future attention, as it is widely available, inexpensive, safe, and acceptable to women. We will certainly be watching this literature for future updates and discussion.

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