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CORRESPONDENCE

Second trimester prenatal ultrasound and screening for Down syndrome

In the US, it is common practice to provide sequential second trimester maternal serum testing and ultrasound in screening for Down syndrome. Following positive maternal serum screening, women receive the 'genetic sonogram' and if there are no abnormal ultrasound findings, the risk is reduced, usually by 50% (Egan *et al*., 2002). Maternal serum screening and the genetic sonogram results are assumed to be uncorrelated. Smith–Bindman *et al*. (2007) have validated this approach in a recent prospective study on women screen-positive by the triple test (AFP, hCG and uE3). They established a 0.55 likelihood ratio for a normal genetic sonogram and a 3.7 likelihood ratio when one or more positive ultrasound markers were present.

Surprisingly, Smith–Bindman *et al*. then conclude that the genetic sonogram should not be used as a sequential test following serum biochemistry because it would substantially reduce the prenatal diagnosis of Down syndrome cases. They base this conclusion on the fact that, among the women in their study, the genetic sonogram *by itself* detected only 53% of the affected pregnancies. Their study treats all positive risks equally such that a serum screen risk of 1 in10 is equivalent to a serum screen risk of 1 in 190. This fails to recognize that when the genetic sonogram is applied to women who have received serum screening, it should not be used alone to determine whether or not Down syndrome might be present. Instead, it should be used as an adjunct that allows the specific numerical risk generated by the serum screening to be further modified—i.e. it is a component of a sequential screening protocol. To use the genetic sonogram as an independent screen without taking into consideration the specific results of any prior testing is analogous to the provision of uncoordinated first and second trimester screening which is misleading and provides no basis for assessing the value of the combined tests (Malone, 2005). While it may be true that the provision of the genetic sonogram only to women who are screen-positive by serum biochemistry may lead to a loss in detection, there will also be an associated reduction in false-positives. The usefulness of the genetic sonogram needs to be evaluated in the context of both.

Since the serum testing and genetic sonogram both provide some ability to distinguish between affected and unaffected pregnancies, it should be possible to devise sequential strategies that draw upon the benefits of both. This can be achieved by carefully selecting an appropriate cut-off for referral for the genetic sonogram and another cut-off for invasive testing (contingent screening). Optimal use of second trimester fetal biometry would also include the use of markers that are continuous variables (e.g. MoMs) rather than above, or below, a threshold value (Benn *et al*., 2002). We believe that there is considerable potential for further development of effective combined second trimester maternal serum and ultrasound screening for fetal aneuploidy and that the current genetic sonogram should be viewed as a useful, but preliminary, step in this development.

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REFERENCES

Benn PA, Kaminsky LM, Ying J, Borgida AF, Egan JF. 2002. Combined second-trimester biochemical and ultrasound screening for Down syndrome. *Obstet Gynecol* **100**: 1168–1176.

Egan JF, Kaminsky LM, DeRoche ME, Barsoom MJ, Borgida AF, Benn PA. 2002. Antenatal Down syndrome screening in the United States in 2001: a survey of maternal-fetal medicine specialists. *Am J Obstet Gynecol* **187**: 1230–1234.

Malone FD. 2005. Sequential pathways of testing after first-trimester screening for trisomy 21. *Obstet Gynecol* **105**: 438–439.

Smith-Bindman R, Chu P, Goldberg JD. 2007. Second trimester prenatal ultrasound for the detection of pregnancies at increased risk for Down syndrome. *Prenat Diagn* **27**: 535–544.