Antenatal screening for Down's syndrome in twin pregnancies: pregnancy or fetus specific risks?

There has been debate whether in antenatal screening for Down's syndrome in twin pregnancies, pregnancy or fetus specific risks should be reported. The National Health Service (NHS) National Fetal Anomaly Screening Programme (FASP) of the UK National Screening Committee (NSC) has stated that 'the results of the nuchal translucency (NT) test may be used in combination with results from a blood test and mother's age, to calculate the risk of each fetus being affected with Down's syndrome' [(1)]. We outline below the reasons why we believe the risk should be pregnancy specific:

1 Screening is offered to establish whether a pregnancy is at sufficient risk of being affected with Down's syndrome to warrant further investigation. It is, therefore, logical to specify a risk relating to the pregnancy, not each fetus.

2 In practice a screen positive result in a twin pregnancy (whether a pregnancy specific risk or fetus specific risk) will result in an amniocentesis (or chorionic villus sampling) being performed and fluid from around both fetuses being sampled and karyotyped. It would not be standard practice to sample only the amniotic fluid of the fetus considered more likely to be affected.

3 While monochorionic pregnancies could be issued fetus specific risks, as they are either both affected or both unaffected, this offers no advantage over a pregnancy specific risk. For example why report 1 in 100 for each fetus instead of 1 in 50 for the pregnancy?

4 The publications that are cited by FASP [(2-7)] to support their statement that fetus specific risks should be reported do not provide an algorithm for the calculation of fetus specific risks using serum markers.

5 FASP assumes that the Down's syndrome risk in a twin pregnancy is double that in a singleton pregnancy. This is incorrect as shown by Cuckle [(8)] and confirmed using unpublished data from the National Down's syndrome Cytogenetic Register which shows an age adjusted relative risk of Down's syndrome in twin pregnancies of 1.15 (95% Confidence Interval; 1.04-1.26) not 2.00 as might be expected.

6 In a dichorionic pregnancy the fetus with the higher NT is the one more likely to be affected but apportioning risk between the two fetuses is not possible since the serum markers are not fetus specific. To our knowledge no peer reviewed publication has overcome this problem. One chapter in a book[(9)] suggests how fetus specific risks could be derived but acknowledges it can only be done using untested assumptions.

7 There maybe a view that a pregnancy specific risk is the average of the two fetus specific risks and for this reason fetus specific risks should be given so that medical staff are alerted to the higher of the two. This, however, is not the case. A pregnancy specific risk is always

higher than a fetus specific risk since pregnancy specific risks are the sum of the risks relating to each fetus. For example if the risk for one fetus was calculated as 1 in 40 and the risk for the other fetus was calculated as 1 in 400, the pregnancy specific risk will be 1 in 36 not an average of the two. This is an important issue that can be easily misunderstood.

8 It has been observed that there is a correlation between NT measurements in twins [2,10]. While this has implications on risk interpretations it does not specifically give fetus specific risks on the basis of ultrasound and maternal serum markers only on the basis of NT measurements alone which is not part of a FASP recognized screening programme.

Conclusion

There is no sound basis for providing fetus specific risks in screening tests that combine maternal serum and ultrasound measurements.

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