Communication in early pregnancy ultrasound: avoiding misunderstandings

Pregnant women in the UK are usually offered at least two ultrasound scans during their pregnancy. While these almost certainly cause no physical harm to the baby, communicating the findings to the parents, whether there is a problem or not, carries real potential for confusion, worry and perhaps unnecessary intervention.

Ultrasound is commonly offered first in pregnancy between 11 and 14 weeks to establish the gestation, identify whether the pregnancy is single or multiple, and to offer aneuploidy screening based on nuchal translucency measurements. A second detailed scan is also often offered between 18 and 20 weeks to screen for structural fetal abnormalities, and later scans are commonly used to assess fetal growth.

Although there are numerous reviews and case reports to suggest an improved perinatal outcome the objective evidence to support this, at least in a low-risk population, is lacking. A Cochrane review of 11 trials involving 37 000 low-risk women confirmed that ultrasound is excellent for confirming gestation and the number of fetuses, but was unable to demonstrate any reduction in adverse outcomes for babies (Whitworth et al, 2010).

In light of this, it is important to consider whether there may be potential harm from the widespread use of ultrasound scanning, particularly with the growth of the fetal 'keepsake' industry (Simonsen et al, 2008). The World Health Organization undertook a review of the current literature involving 16 controlled trials, 13 cohort and 11 case control studies and concluded that there was probably no significant adverse effect on pregnancy outcome from the procedure itself (Torloni et al, 2009). The only potential harm, therefore, might come from either misinterpretation of the scan findings, or from misrepresentation of the scan findings to the parents.

The chance of misinterpretation of the findings is probably very small. In a review of ultrasound screening for fetal abnormality, although the sensitivity (i.e. the chance of identifying a problem) was overall relatively low (35–65%), the false positive rate (i.e. the chance of an identified problem not being present) was <0.1%. It is therefore very unlikely that a termination will be carried out for an incorrect diagnosis. Misrepresentation of the findings is rather different, however, and this article will consider this issue in more detail. Such misrepresentation can arise with 'normal scans', with how we communicate problems in an 'abnormal scan', or in how we communicate probabilities when there is uncertainty over the results.

Communication during a 'normal' scan

The sonographer and the parents may begin the scan with different expectations. The sonographer is likely to be focusing on the scan as a screening test, and will be hoping to obtain adequate views of the basic structures within the limits of time, fetal position and maternal body mass index. Parents, on the other hand, consider a scan to be an important step towards parenthood (Molander et al, 2010). They are often hoping to see a clear view of the baby, to perhaps find out whether it is a boy or a girl and to confirm their expectations that the baby is normal (Simonsen et al, 2008). Seeing the baby on scan been reported to 'make the pregnancy seem real' (Georgsson et al, 2008) and has also been shown to provoke feelings of 'amazement', 'excitement' and 'relief' as well as 'strengthening the maternal bond' (Yagel et al, 2009).

The parents are often anxious before a scan, mothers sometimes more so than fathers (Ekelin et al, 2009), and they can be sensitive to verbal and non-verbal cues. This is particularly around whether the sonographer appears to be friendly and interested rather than the scan being yet another screening procedure in a long and tedious day (Simonsen et al, 2008). Although silence during the scan may simply reflect the sonographer's concentration, parents may take a silence as 'there being something wrong'. Lack of eye contact at the end may also just be the sonographer checking the time, writing in the notes and entering findings on a database, but can again be interpreted as there being information withheld.

Phrases should be carefully chosen. 'There is a shadow', for example, simply implies that there is a radio-opaque structure limiting the view, but is often interpreted as 'something black and sinister'. 'I can't get a view of…' usually suggests a sub-optimal position or adverse maternal body mass index, but may be taken to mean that the structure is not present. Parents may also take offence if the sonographer does not use the name of

Dr Brian A Magowan *is Consultant in Obstetrics and Gynaecology and* **Dr Mayank Madhra** *is Specialty Trainee 4 in Obstetrics and Gynaecology, Borders General Hospital, Melrose TD6 9BS*

Correspondence to: Dr BA Magowan (brian.magowan@borders.scot.nhs.uk)

a previous child they have lost when talking about previous pregnancies, particularly if the baby is referred to as 'it' rather than 'your son', 'your daughter' or 'your baby'.

In addition to friendliness, the way in which the sonographer feeds back information during a normal scan has also been studied (Reading and Cox, 1982; Reading and Platt, 1985). Given the routine use and increased access of ultrasound screening today rather than the more limited access in the early 1980s, these findings are likely to be widely relevant. Two groups were considered: one group with high feedback (who were shown images on a monitor and given a real-time description of the ultrasound findings) and the other group with low feedback (no monitor and patients were provided only general assurances of normality). Seventy-four per cent of patients receiving high feedback found the examination worthwhile compared to only 11% in the latter group. More frequently, the high feedback group also felt more 'reassured' and 'relieved', and considered the examination information as providing 'more confidence'. These studies were included in a Cochrane meta-analysis (Nabhan and Faris Mohammed, 2010) which also concluded that women in the high feedback groups were more likely to choose positive adjectives to describe their feelings after the scan, although it is noted that this did not reach statistical significance (relative risk 3.3, 95% confidence interval 0.73–14.85).

In summary, it is appropriate for the sonographer to acknowledge and share in the patient's parenting experience, and to ensure that communication about the scan itself is engaging and clear.

Communication during an 'abnormal' scan

The finding of a significant abnormality during a scan is potentially stressful for the sonographer and potentially devastating for the parents (Götzmann, 2001). The parents' reactions of shock, grief, guilt and the loss of their sense of security are well documented (Ekelin et al, 2008).

The sonographer may feel under pressure to arrive at a clear answer, and may find talking and concentrating difficult. The silence can be tense and prolonged. It may be worth saying something to defuse this silence like: 'I am a little concerned that there might be a problem, so I'll need to look quite carefully here and will explain it all to you when I've finished looking'.

If the sonographer feels that there is a problem, Alkazaleh et al (2004) found that the parents value getting provisional information from the sonographer immediately, rather than waiting until a more senior person arrived to break the news. They also found that the perceived empathy of the information-giver is important, that privacy is essential, and that the word 'baby' is preferred over 'fetus'. This confirmed the previous findings of Detraux et al (1998) and both studies confirmed the not-surprising finding that parents value accurate information above everything, especially about survivability and treatment. At the end of the consultation the parents may wish to have some time by themselves before leaving, and they should be clear about when they are to be reviewed and who to phone if there is a problem or if they have further questions.

It is unwise to make a decision about termination of pregnancy on the same day that a diagnosis is identified. At the point that termination is offered the parents may wish to ask about the issues listed below, but others may wish to have answers to these questions over the following days. The timing of these discussions is probably best guided to some extent by cues from the parents; if no cues are forthcoming, the following areas will usually need discussed at some point:

- Will the baby be born alive? Even at pre-viability gestations, it is common for the baby to be born alive, and resuscitation would not be offered.
- Will we see the baby? Many parents will expressly wish to see and hold their baby, and those that do should be supported and strongly encouraged to do so.
- Should we have a post mortem? This will offer more information than any other tests, and can sometimes be crucial in the management of future pregnancies.
- What about funeral arrangements? Parents should be allowed to choose freely about planning a funeral service.

Communication of probability

This is perhaps the most challenging area of all, and can be illustrated by how we deliver the results of prenatal testing for Down's syndrome. If the chance of Down's syndrome after a screening test in a 30-year-old mother, for example, has been returned as 1:100 we can explain it different ways as illustrated in *Figure 1*.

The first (*Figure 1a*) and the third (*Figure 1c*) statements say exactly the same thing, but the statements have been coloured by our subjective interpretation of the facts. Even the word 'risk' carries negative connotations that the word 'chance' does not. In some circumstances, 1:100 is a small number. Say, for example, a horse was predicted to have a 99% chance of winning a race then it is likely that a gambler would offer a very large sum of money for the bet. In other situations, however, 1:100 is a large number. One would be reluctant to take a fairground ride if there was a 1:100 chance of dying on the loop-the-loop. In the same way, the perceived consequences of having a baby with Down's syndrome colour our interpretation of the words 'high' and 'low' risk. The numerical probability of a risk is less important than the perceived severity of the hazard (Walter and Britten, 2002), and the words 'risk' and 'Down's syndrome' tend to dominate the parents' thinking more than the numerical chance. Personal beliefs about fatalism, choice, control and 'womanhood' all affect our portrayal of the numbers, and subsequent

Figure 1. a. The result is back, and it's high risk. It's 1:100.

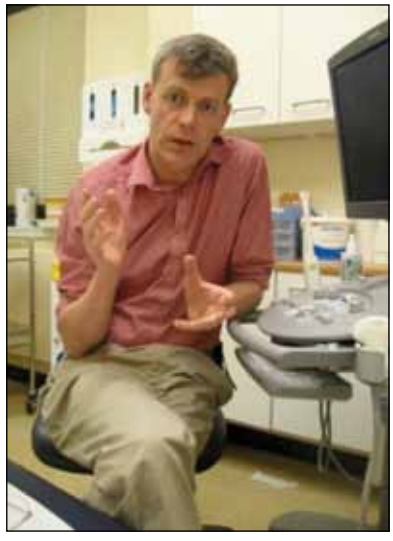

Figure 1. b. The result is ten times higher than would be expected.

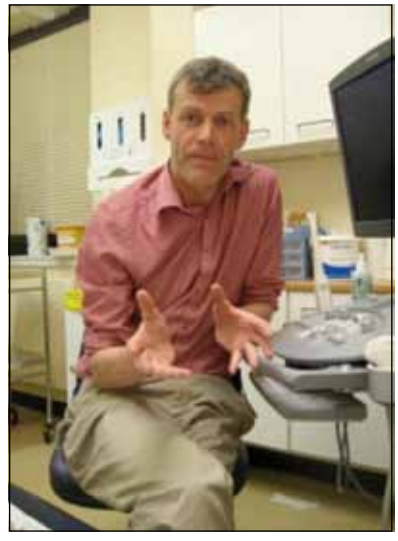

Figure 1. c. Good news, there is a 99% chance that everything is OK.

decisions are inevitably influenced by emotion as well as logic (Grimes and Snively, 1999). Parents are therefore less keen on invasive testing after being told that 'there is a 99% chance of everything being OK' than they are if told 'it's high risk at 1:100'.

The middle example (*Figure 1b*) uses the concept of relative risk rather than absolute risk. Relative risk always seems higher: 'the risk of miscarriage after chorionic villous sampling is about twice that of amniocentesis' sounds worse to most people than 'the risk of chorionic villous sampling is 2%'. Furthermore, expressing the likelihood of normality (98% of people who have chorionic villous sampling are fine) sounds better still. There is very good evidence that absolute risk is preferred over relative risk, and there is also good evidence that rates (for example 1 in 244) are easier to understand than proportion (4.1 per 1000) regardless of respondents' age, language or education (Trevana et al, 2006).

The final point from the above three examples is the importance of non-verbal communication. In each instance, the face of the counselor is saying something quite different, and again this is a reflection of his personal interpretation of the facts. If non-verbal and verbal communication conflict, the non-verbal communication will always override the verbal. Sonographers should be aware that non-verbal cues, either positive to reassure, or negative to provide a warning shot, may not be picked up by the patient in the low light settings of the scan room. This can blunt any intended effect, and a greater emphasis may then be placed on para-verbal cues such as the tone, speed, volume and pauses in speech.

Nowhere, perhaps, does communication of chance present more challenges than with soft markers (e.g. the presence of choroid plexus cysts, echogenic foci in the heart, mildly dilated renal pelvices). Soft markers are findings which in themselves tend to be no consequence, but which may very slightly increase the chance of there being an underlying chromosomal problem. Telling parents about soft markers increases their chance of requesting an amniocentesis or chorionic villous sampling, but these very rarely identify problems. It is difficult to explain what a choroid plexus cyst is, for example, without using the words 'brain', 'cyst' and 'chromosomal problem' and parents will again remember these last four words more clearly than, say, the 1:500 chance you might expect any problem to be. Even such low-risk findings can be a shock to parents (Ahman et al, 2010), with the majority claiming that they had no knowledge that such a dilemma could arise (Cash et al, 2010). An excellent review of soft markers concluded that reporting them to the parents approximately tripled the iatrogenic loss rate from invasive testing with no significant increase in anomaly detection rate, and recommended that single isolated markers should therefore be ignored (NHS Quality Improvement Scotland, 2003).

Conclusions

To ensure that we do no harm, it is essential to communicate our prenatal ultrasound results clearly and responsively. **BJHM**

Conflict of interest: none.

KEY POINTS

- Be courteous and interested.
- Look people in the eye if breaking news, bad or good.
- Take great care with how even normal findings are phrased.
- Quote 'absolute risks' rather than 'relative risks', but use the word 'chance' to describe them.
- Be aware of your own prejudice which it comes to interpreting numbers: the prejudice is easily read in non-verbal communication.

Ahman A, Runestam K, Sarkadi A (2010) Did I really want to know this? Pregnant women's reaction to detection of a soft marker during routine ultrasound screening. *Patient Educ Couns* **81**(1): 87–93

Alkazaleh F, Thomas M, Grebenyuk J et al (2004) What women want: women's preferences of caregiver behaviour when prenatal sonography findings are abnormal. *Ultrasound Obstet Gynecol* **23**(1): 56–62

Cash R, Manogaran M, Sroka H et al (2010) An assessment of women's knowledge of and views on the reporting of ultrasound soft markers during the routine anatomy ultrasound examination. *J Obstet Gynaecol Can* **32**(2): 120–5

Detraux J-J, Gillot de Vries F, Vanden Eynde S, Courtois A, Desmet A (1998) Psychological impact of the announcement of a fetal abnormality on pregnant women and on professionals. *Ann NY Acad Sci* **847**: 210–19

Ekelin M, Crang-Svalenius E, Nordstrom B (2008) Parents' experiences, reactions and needs regarding a nonviable fetus diagnosed at a second trimester. *J Obstet Gynecol Neonatal Nurs* **37**(4): 446–54

Ekelin M, Svalenius EC, Larsson AK et al (2009) Parental expectations, experiences and reactions, sense of coherence and grade of anxiety related to routine ultrasound examination with normal findings during pregnancy. *Prenat Diagn* **29**(10): 952–9

Georgsson Ohman S, Waldenstrom U (2008) Second-trimester routine ultrasound screening: expectations and experiences in a nationwide Swedish sample. *Ultrasound Obstet Gynecol* **32**(1): 15–22

Götzmann L (2001) [Communication competence in ultrasound examination in pregnancy]. *Gynakol Geburtshilfliche Rundsch* **41**(4): 215–22

Grimes DA, Snively GR (1999) Patients' understanding of medical risks: implications for genetic counseling. *Obstet Gynecol* **93**: 910–14

Molander E, Alehagen S, Bertero CM (2010) Routine ultrasound examination during pregnancy: a world of possibilities. *Midwifery* **26**(1): 18–26

Nabhan AF, Faris Mohammed A (2010) High feedback versus low feedback of prenatal ultrasound for reducing maternal anxiety and improving maternal health behaviour in pregnancy. Cochrane Pregnancy and Childbirth Group. *Cochrane Database Syst Rev* **4**: CD007208

NHS Quality Improvement Scotland (2003) *Routine ultrasound scanning before 24 weeks of pregnancy.* Health Technology Assessment Report 5. NHS Quality Improvement Scotland, Glasgow

Reading AE, Cox DN (1982) The effects of ultrasound examination on maternal anxiety levels. *J Behav Med* **5**: 237–47

Reading AE, Platt LD (1985) Impact of fetal testing on maternal anxiety. *J Reprod Med* **30**: 907–10

Redelmeier DA, Rozin P, Kahneman D (1993) Understanding patients' decisions. Cognitive and emotional perspectives. *JAMA* **270**: 72–6

Simonsen SE, Branch DW, Rose NC (2008) The complexity of fetal imaging: reconciling clinical care with patient entertainment. *Obstet Gynecol* **112**(6): 1351–4

Torloni MR, Vedmedovska N, Merialdi M (2009) Safety of ultrasound in pregnancy: WHO systematic review of the literature and meta-analysis. *Ultrasound Obstet Gynecol* **33**(5): 599–608

Trevena LJ, Davey HM, Barratt A, Butow P, Caldwell P (2006) Screening and Test Evaluation Program. *J Eval Clin Pract* **12**(1): 13–23

Walter FM, Britten N (2002) Patients' understanding of risk: a qualitative study of decision-making about the menopause and hormone replacement therapy in general practice. *Fam Pract* **19**: 579–86

Whitworth M, Bricker L, Neilson J et al (2010) Ultrasound in early pregnancy. *Cochrane Database Syst Rev* **4**: CD007058

Yagel S, Cohen SM, Messing B (2009) Three-dimensional and four-dimensional ultrasound applications in fetal medicine. *Curr Opin Obstet Gynecol* **21**(2): 167–74