Från verksamhetsområde obstetrik och gynekologi vid Södersjukhuset

Prenatal diagnosis in routine antenatal care

A randomised controlled trial

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Abstract

Nuchal translucency (NT) measurement combined with maternal age has been shown to identify women at an increased risk of carrying a fetus with Down's syndrome (DS) more accurately than does maternal age alone. The aim of this study was to evaluate more widely the effects of two different strategies for prenatal diagnosis.

39,772 women were randomised to a routine ultrasound scan at 12-14 gestational weeks (gws)(12-week group) or at 15-22 gws (18-week group). Fetal karyotyping was offered if the risk of DS according to NT screening was ≥ 1/250 (12-week group) or if the woman was ≥ 35 years old (18-week group). In both groups it was also offered if a fetal structural abnormality was detected at the scan, and if there had been a chromosomal disorder in a previous pregnancy. Anomaly screening was performed in both groups according to a checklist. Dating performance was assessed by comparing true gestational age in in-vitro fertilised pregnancies with gestational age according to ultrasound, using ten dating formulas. In 24 women at risk of DS ≥ 1/250 according to NT screening, mental reactions were explored by two interviews during pregnancy and one after delivery.

Ten babies with DS were live born in the 12-week group vs. 16 in the 18-week group (0.5/1,000 vs. 0.8/1,000, n.s.). For every case of DS prenatally detected, 38 and 85 amniocenteses were performed. Excluding testing for reasons other than those defined in the study protocol, the corresponding figures were 16 and 89, respectively. Significantly more DS pregnancies were terminated or spontaneously lost in the 12-week group (45 vs. 27; p=0.04).

The detection rate < 22 gws of fetuses with any lethal/severe malformation was 31% (53/169) in the 12-week group, and 41% (61/149) in the 18-week group (p=0.08). In the 12-week group, 69% of fetuses with a lethal malformation were detected at the early scan. The 18-week scan strategy seemed better for detecting some specific lethal/severe malformations, but the differences were not statistically significant.

Pregnancy dating at 12-14 weeks was more precise than at 15-22 gws as expressed by the standard deviation of the estimates (2 vs. 3 days). Three dating formulas performed very well at both early and late dating. Our results indicate that the estimated day of delivery should be at 281 days of gestation, rather than at 280 days as used today.

Women at increased risk of DS showed strong reactions of anxiety, often expressed by putting the pregnancy "on hold". In most women, this anxiety faded away after receiving normal results from fetal karyotyping. After the birth, most women would consider NT screening in a future pregnancy. Women ≥ 35 years old who had a risk score lower than their age-related risk were less anxious about the risk. Many women expressed a need for more information about the screening and the risk.

Neither of the strategies for prenatal diagnosis evaluated is superior to the other in all respects. An alternative with which woman may choose both scans may be optimal. A decision about what strategy to choose must be preceded by an analysis of the financial consequences. Based on experiences from this trial, it might be stated that an implementation of NT requires extensive efforts in terms of education, training, quality control, and in developing strategies to support of women with an increased risk at screening.

Key words: ultrasound, fetal ultrasonography, Down's syndrome, chromosomal disorder, nuchal translucency, genetic screening, prenatal diagnosis, abnormalities, gestational age, in vitro fertilization, fetometry, dating formulas, false positive reactions, anxiety

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