Systematic review with meta-analysis

Further research needed before late pregnancy ultrasound can be recommended for all

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Commentary on: Bricker L, Medley N, Pratt JJ. Routine ultrasound in late pregnancy (after 24 weeks' gestation). *Cochrane Database Syst Rev* 2015;6:CD001451.

Implications for practice and research

- There is currently not enough evidence to institute routine late pregnancy ultrasound (LPU) in low-risk pregnancies.
- There is an urgent need for trials looking at the potential impact of routine LPU on detection of fetal growth restriction (FGR). These must include management algorithms in order to assess the impact of acting on findings.

Context

Ultrasound scanning has transformed the management of pregnancy. Late pregnancy ultrasound (LPU) can be used to diagnose a range of conditions including FGR. However, there is controversy surrounding the value of routine LPU screening in unselected populations. The rationale of screening for clinical conditions which place the fetus or mother at high risk but are unlikely to be detected by clinical examination is clear, as long as subsequent management would improve perinatal outcome. Although ultrasound scans are generally popular with women, the question is whether screening all women will result in an increase in the number of interventions such as induction of labour (IOL), without benefit to mothers or babies.

Methods

The authors searched the Cochrane Pregnancy and Childbirth Group's Trials Specialised Register to identify all acceptable controlled trials of routine LPU (after 24 weeks) in unselected populations and designated low-risk populations. Study inclusion required routine LPU to assess one, some or all of: fetal size or anatomy or presentation; amniotic fluid volume; placental site or grading. Three authors independently assessed trials for inclusion and risk of bias, extracted data and checked them for accuracy. Overall quality of the evidence was assessed using the GRADE approach. Primary outcomes were: IOL, caesarean section, perinatal mortality, preterm delivery less than 34 weeks, preterm delivery less than 37 weeks, neurodevelopment at age two and maternal psychological effects. Secondary outcomes included birth weight less than the third centile and acute neonatal problems.

Findings

Thirteen trials were included (34 980 women) with mixed risk of bias. There was no significant effect on the outcomes of IOL (average RR 0.93, 95% CI 0.81 to 1.07, I^2=78%) or caesarean section (average RR 1.03, 95% CI 0.92 to 1.15; I^2=54%). No data were available for preterm delivery before 34 weeks, neurodevelopment at age two or maternal psychological effects.

There was conflicting evidence in two studies regarding whether routine ultrasound increased or decreased the need for further ultrasound scans. Significantly fewer women who had LPU gave birth to post-term infants, although 98.9% of data were contributed by a single trial with many women in the control group not receiving an early pregnancy dating ultrasound. These findings should be interpreted cautiously.

Routine LPU had no effect on birth weight less than the 5th or 10th centile and less than 2.5 kg compared with no/concealed/selected LPU and no significant effect on stillbirths or any neonatal outcomes.

Commentary

The meta-analysis by Bricker *et al* is an update and includes data from two new studies and use of the GRADE approach to evaluate the quality of the evidence. The use of ultrasound in unselected, low-risk populations is controversial and many clinicians argue that LPU can reduce the mortality/morbidity associated with late onset FGR. For this reason, this meta-analysis is of great clinical importance.

It is well established that FGR is associated with many adverse outcomes including stillbirth and neonatal death. In the UK, women with risk factors for a small for gestational age fetus (SGA) are offered serial LPU with the aim of reducing morbidity/mortality associated with FGR.[1] A recent prospective cohort study of nulliparous women with a viable singleton pregnancy reported that screening nulliparous women with universal third trimester fetal biometry at 28 and 36 weeks gestation roughly tripled the detection of SGA infants.[2] The current Cochrane review reported no effect on any birth weight outcome when comparing routine LPU with no/concealed/selected ultrasound. However, one study included in the review examined the impact of routine serial LPU on birth outcomes, and two exceptions showing statistically significant differences were birth weight less than the 10th centile (RR 1.36, 95% CI 1.10 to 1.68) and birth weight less than the 3rd centile (RR 1.66, 95% CI 1.10 to 2.51). Lower birth weight occurred more frequently in treatment groups. It is unlikely that serial LPU has caused the reduction in birth weight. However, one can hypothesise that LPU results were evaluated by clinicians and actions taken such as delivery on detection of FGR. Since the trials included did not contain management algorithms, this is only conjecture. While this review has been unable to untangle the impact of routine LPU on detection of FGR, it strongly points towards the need for further research in this area.

Competing interests None declared.

Provenance and peer review Commissioned; internally peer reviewed.

References

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2. Sovio U, White IR, Dacey A, *et al*. Screening for fetal growth restriction with universal third trimester ultrasonography in nulliparous women in the Pregnancy Outcome Prediction study: a prospective cohort study. *Lancet* 2015;**386**:2089–97.