Postnatal cardiovascular morbidity following preterm pre-eclampsia: an observational study.

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Abstract

Objective Explore the nature of postnatal cardiovascular morbidity following pregnancies complicated by preterm pre-eclampsia and identify associations between pregnancy characteristics and postnatal cardiovascular function. Design Observational sub-study of a single-centre feasibility randomised double-blind placebo-controlled trial. Setting Tertiary maternity hospital, UK. Population Women with preterm pre-eclampsia, delivering <37 weeks. Methods Eligible women underwent echocardiography, arteriography and blood pressure monitoring <3 days, 6 weeks and 6 months postpartum. Correlations between pregnancy and cardiovascular characteristics were assessed using Spearman's correlation. Main Outcome Measure Prevalence of cardiovascular dysfunction and remodelling 6 months following preterm pre-eclampsia. Results Forty-four women completed the study. At 6 months, 27 (61%) had diastolic dysfunction, 33 (75%) had raised total vascular resistance (TVR) and 18 (41%) had left ventricular remodelling. Sixteen (46%) women had de novo hypertension by 6 months and only 2 (5%) women had a completely normal echocardiogram. Echocardiography did not change significantly from 6 weeks to 6 months. Earlier gestation at delivery and lower birthweight centile were associated with worse 6-month diastolic dysfunction (E/E': rho=-0.39, p=0.001 & rho=-0.42, p=0.005) and TVR (rho=-0.34, p=0.02 & rho=-0.37, p=0.01). Conclusions Preterm pre-eclampsia is associated with persistent cardiovascular morbidity 6 months postpartum in the majority of women. These cardiovascular changes have significant implications to long-term cardiovascular health. The graded severity of diastolic dysfunction and TVR with worsening pre-eclampsia phenotype suggests a dose-effect. However, the mechanistic link remains uncertain. Funding Medical Research Council (MR/R001693/1). Registration https://www.clinicaltrials.gov; NCT03466333. Key words Pre-eclampsia: clinical research; radiological imaging: ultrasound; medical disorders in pregnancy.

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