

EP15.28 Umbilical vein flow and adverse perinatal outcomes: merely associated or a good predictor?

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Introduction

As umbilical vein blood flow (UV-Q) may be reflective of placental function, the aim of this study was to investigate its association with, and predictive utility for, adverse perinatal outcomes.

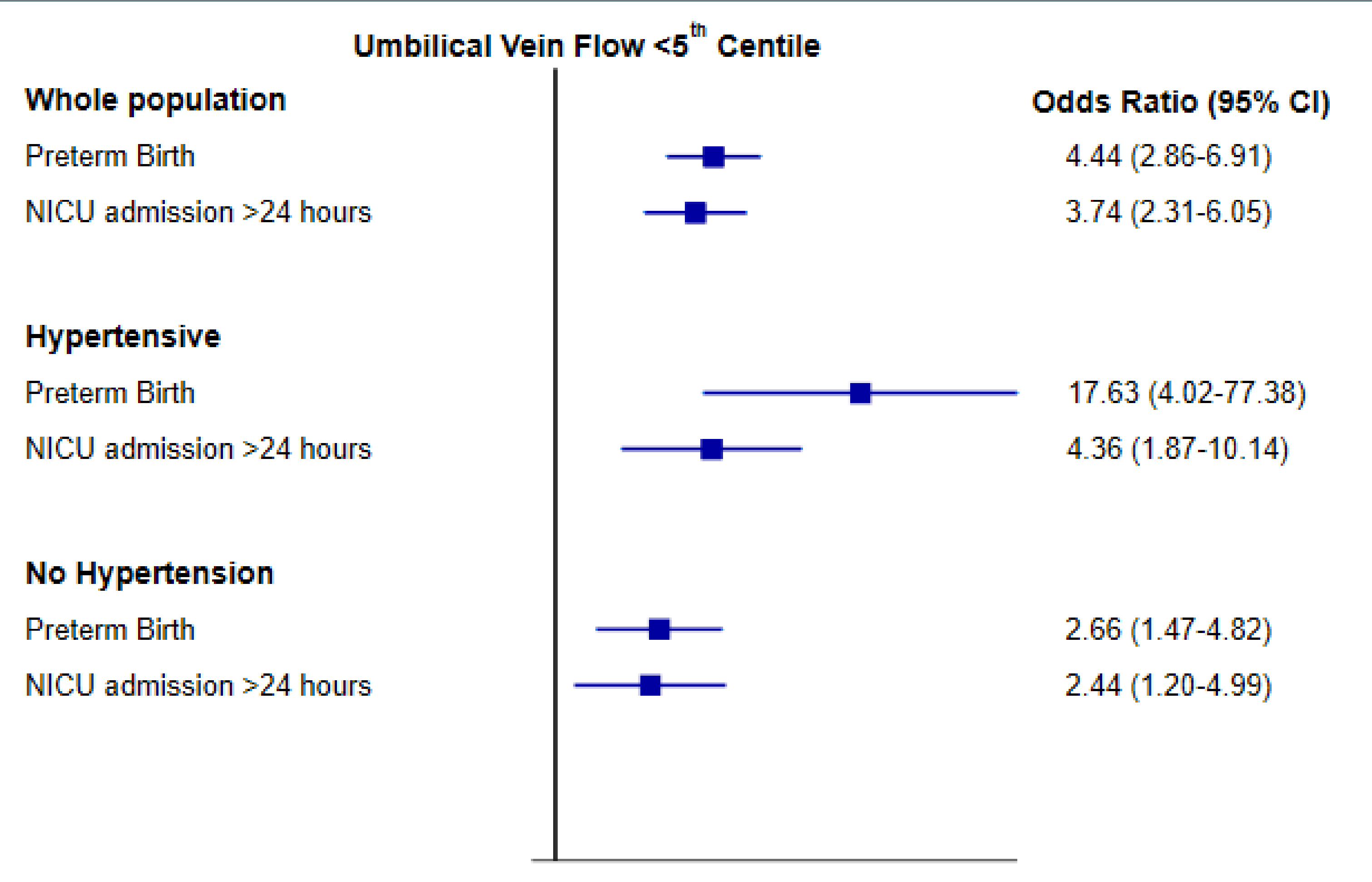
Methods

This was an Australian single-centre prospective cohort study of singleton pregnancies. We determined the effect of UV-Q <5th and <10th centiles for gestation at final ultrasound (US) prior to birth on: preterm birth (PTB - <37 weeks), spontaneous PTB, emergency Caesarean section (EmCS), birthweight <3rd and <10th centile, birthweight <2,500g, severe neonatal neurological morbidity, perinatal mortality, neonatal death, NICU admission >24hs and need for severe resuscitation. We stratified our analyses by hypertensive disorders of pregnancy (HDP).

Results

The study cohort comprised 1458 women. A total of 836 (75.8%) cases with a final US prior to birth were included. Of these, 182 (21.8%) were small for gestation age (SGA), 226 (27.0%) early fetal growth restriction (FGR), 226 (27.0%) late FGR, and 202 (24.2%) appropriate for gestational age (AGA). Across the entire cohort, UV-Q <5th and 10th centiles were significantly associated with PTB and NICU admission >24 hours across cohorts regardless of HDP (UV-Q<5th OR 4.44, 95%CI 2.86-6.91; UV-Q<10th OR 4.13, 95%CI 2.83-6.04). The odds of PTB and NICU admission >24 hours were however significantly higher in the HDP cohort compared to the non-HDP cohort with the highest odds of PTB seen when the UV-Q was <5th (OR 17.63, 95%CI 4.02-77.38). UV-Q <10th centile was associated with increased odds of birthweight <10th and EmCS. Both UV-Q <5th and <10th centiles were also strongly associated with greater odds of severe neonatal morbidity and birthweight <2,500g regardless of HDP. Overall, UV-Q demonstrated low sensitivity and positive predictive values for all study outcomes.

Figure 1. Logistic Regression models of the effect of umbilical vein flow <5th centile on preterm birth and NICU admission overall and in hypertensive and non-hypertensive cohorts.



Conclusion

Low UV-Q is strongly associated with increased odds of any PTB, EmCS, birthweight<10th, NICU admission >24 hours and severe neonatal morbidity. It was not associated with perinatal mortality or severe resuscitation. Despite the association with adverse outcomes, it functioned poorly as a predictor.