

Cerebroplacental ratio and adverse birth outcomes in post-date pregnancies: A pilot study

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Introduction

Pregnancies continuing beyond 40 weeks are associated with an increasing risk of adverse perinatal outcomes, highlighting the importance of effective fetal surveillance.

Objectives: To assess the association between the cerebroplacental ratio (CPR) and adverse outcomes in post-date pregnancies, and to compare its predictive accuracy with standard surveillance methods, including the non-stress test (NST) and amniotic fluid index (AFI).

Methods

Design: Prospective pilot study of 100 pregnancies; CPR measured from 40 weeks gestation onward.

Adverse outcome: 5-min Apgar <7, NICU admission, emergency caesarean delivery, stillbirth, or umbilical cord arterial pH <7.1.

CPR comparison: Median CPR values compared using the Wilcoxon rank-sum test.

Association: Poisson regression estimated RR and 95% CI, adjusted for maternal age, gestational age, and parity.

Prediction: Logistic regression compared AUC for AFI, NST, and covariates with and without CPR.

Results

- **100 pregnancies** were included; **44 (44.0%)** experienced an adverse outcome.
- CPR ranged from **0.55–2.85**, with a median of **1.53 (IQR 1.26–1.78)**.
- Median CPR was **1.58** among pregnancies with adverse outcomes vs **1.49** among those without (**p=0.43**).
- **Unadjusted RR:** 1.25 (95% CI 0.63–2.47).
- **Adjusted RR:** 1.28 (95% CI 0.64–2.54), adjusted for maternal age, gestational age, and parity.
- Adding CPR did not improve predictive performance: **AUC 0.59 (95% CI 0.47–0.70)** with or without CPR.

Conclusion

In this pilot study, CPR showed no statistically significant association with adverse birth outcomes and did not substantially improve prediction beyond NST and AFI. Larger prospective studies are required to determine whether CPR provides incremental value for monitoring post-date pregnancies.



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