

CEREBROPLACENTAL RATIO: HIGH-ACCURACY DIAGNOSTIC TOOL FOR PREDICTING ADVERSE OUTCOMES IN IUGR PREGNANCIES

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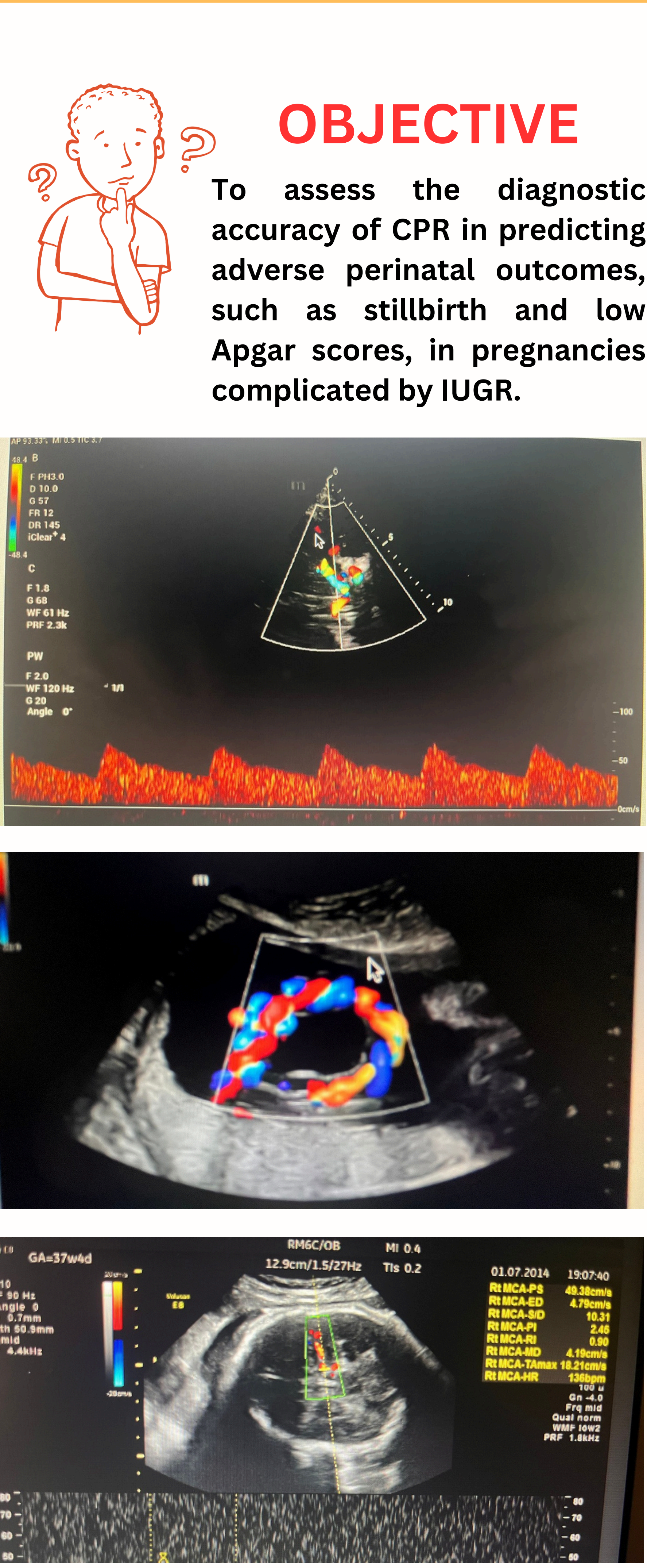
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Introduction

Intrauterine Growth Restriction (IUGR) complicates 10–15% of pregnancies globally and is a leading contributor to perinatal morbidity and mortality, including stillbirth and neonatal complications. Adverse perinatal outcomes associated with IUGR highlight the need for early detection and effective monitoring of at-risk fetuses. Doppler ultrasound indices, specifically the Cerebroplacental ratio (CPR), have emerged as valuable tools for evaluating fetal well-being in IUGR pregnancies. CPR is derived from the ratio of blood flow velocities in the middle cerebral artery (MCA) and umbilical artery (UA), serving as a non-invasive predictor of hypoxia and adverse outcomes.

Study Design

This cross-sectional validation study was conducted from December 2022 to Dec 2023 at MCH Unit . A total of 205 singleton pregnancies diagnosed with IUGR (gestational age >28 weeks) were included through non-probability consecutive sampling. Doppler ultrasound was performed to calculate CPR. Adverse outcomes were defined as stillbirth or an Apgar score <7 at 5 minutes. Sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), and diagnostic accuracy of CPR were calculated.



OBJECTIVE

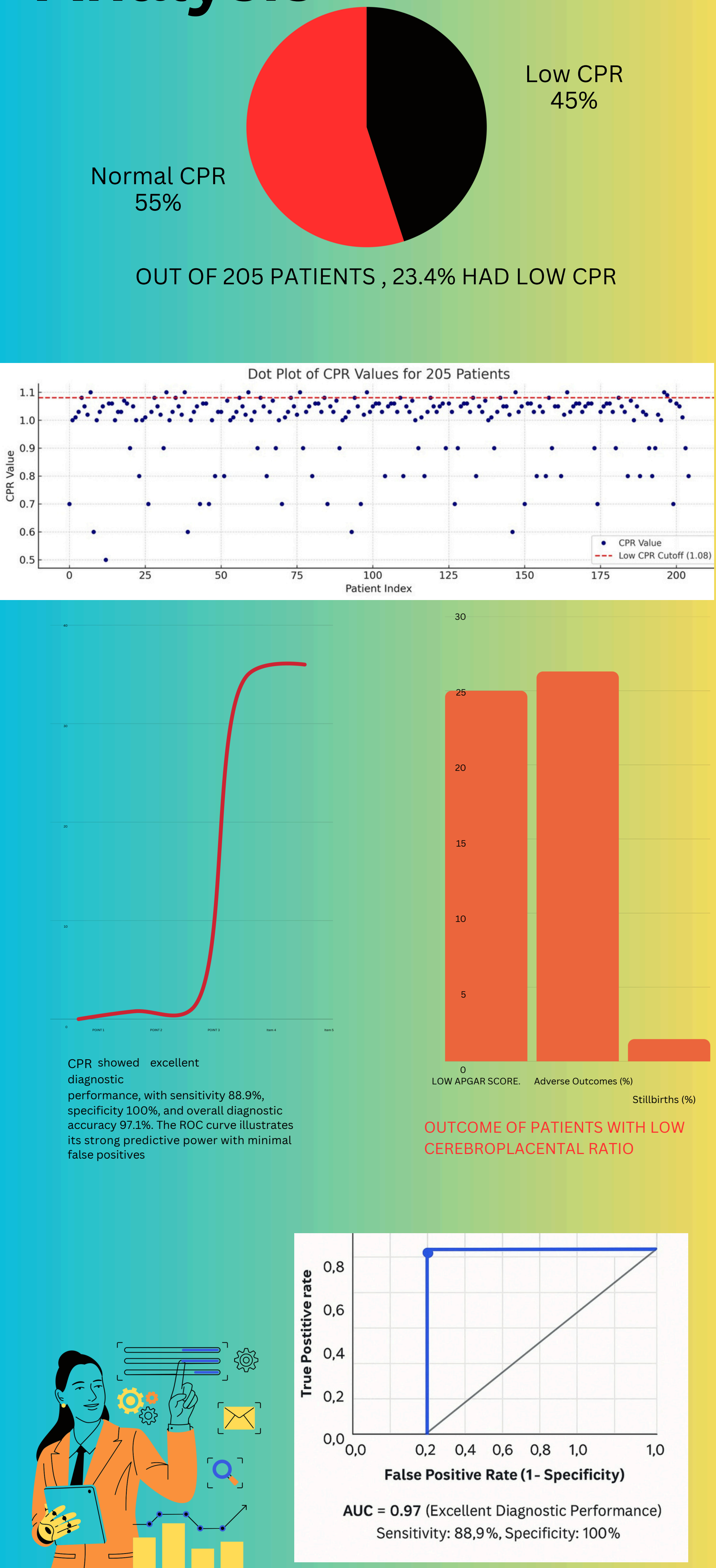
To assess the diagnostic accuracy of CPR in predicting adverse perinatal outcomes, such as stillbirth and low Apgar scores, in pregnancies complicated by IUGR.

RESULTS

The mean gestational age at enrollment was 35.63±1.68 weeks. Among participants, 23.4% had low CPR values, while 26.3% experienced adverse outcomes, including 1.5% stillbirths and 25.2% low Apgar scores. CPR demonstrated a sensitivity of 88.9%, specificity of 100%, PPV of 100%, NPV of 96.18%, and an overall diagnostic accuracy of 97.07%. Subgroup analyses showed consistently high accuracy across variables such as gestational age, parity, neonatal gender, and mode of delivery, emphasizing the robustness of CPR as a diagnostic marker.

Parameter	Graph
Mean gestational age	35.63 ± 1.68 weeks
Low CPR values	23.4% of participants
Adverse outcomes	26.3% overall (1.5% stillbirths, 25.2% low Apgar scores)
CPR diagnostic performance	Sensitivity: 88.9%, Specificity: 100%, PPV: 100%, NPV: 96.18%, Accuracy: 97.07%

Analysis



CONCLUSION

CPR is a highly sensitive and specific tool for predicting adverse perinatal outcomes in IUGR pregnancies. Routine inclusion of CPR in Doppler assessments can guide timely interventions, improve delivery planning, and reduce perinatal complications. This study underscores the importance of incorporating CPR into antenatal surveillance protocols, particularly in resource-limited settings, to optimize maternal and neonatal outcomes. Further research could validate these findings in broader populations, solidifying CPR's role in standard obstetric care.



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