

Clinical utility of the sFlt-1/PlGF ratio in term pregnancies for predicting adverse perinatal outcomes: a retrospective analysis

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Introduction

The sFlt-1/PlGF ratio blood test predicts chronic placental dysfunction disorders and their adverse perinatal outcomes in preterm pregnancies. However, there is limited evidence regarding its role at term. This study aimed to assess the utility of the sFlt-1/PlGF ratio at term in predicting the following adverse perinatal outcomes: small for gestational age neonates; operative delivery for suspected fetal welfare compromise; and neonatal compromise.

Methods

Subjects (n=716) with antenatal sFlt-1/PlGF measurements at ≥ 37 weeks' gestation were analysed from a hospital database of sFlt-1/PlGF results and related clinical information collected over the period 2017-2021. sFlt-1/PlGF ratios of ≥ 38 , 38-110, >110 and >201 were tested against the outcomes of birthweight ≤ 10 th centile, operative delivery (vaginal or abdominal) for suspected fetal welfare compromise, and poor neonatal welfare measured by 5-minute Apgar score and SCN/NICU admission. Data were analysed using a logistic regression model with a statistical significance of $p < 0.05$.

Table: ratio of sFlt-1 to PlGF for participants with neonates with birthweight ≤ 10 th centile or operative delivery for suspected fetal welfare compromise

	sFlt-1/PlGF Ratio	n	Odds Ratio (95% CI)	p-value	Sensitivity % (95% CI)	Specificity % (95% CI)	PPV % (95% CI)	NPV % (95% CI)
Birthweight ≤ 10 th Centile	Continuous	716	1.01 (1.00, 1.01)	<0.001*				
	≥ 38	36	1.92 (1.10, 3.33)	0.02	62.07 (49.58, 74.56)	54.56 (50.75, 58.36)	10.75 (7.43, 14.06)	94.23 (91.88, 96.57)
	38-110	21	0.93 (0.53, 1.63)	0.80				
	>110	15	3.48 (1.85, 6.53)	<0.001*	25.86 (14.59, 37.13)	90.27 (88.01, 92.54)	18.99 (10.34, 27.65)	93.25 (91.30, 95.20)
	>201	3	2.94 (0.80, 10.72)	0.10	5.17 (-0.53, 10.87)	98.18 (97.15, 99.20)	20.00 (-0.24, 40.24)	92.15 (90.16, 94.15)
Operative Delivery for Suspected Fetal Welfare Compromise	Continuous	716	1.01 (1.00, 1.01)	<0.001*				
	≥ 38	30	1.43 (0.82, 2.50)	0.21	55.56 (42.30, 68.81)	53.93 (50.13, 57.73)	8.96 (5.90, 12.01)	93.70 (91.26, 96.14)
	38-110	17	0.80 (0.44, 1.46)	0.47				
	>110	13	2.77 (1.43, 5.42)	0.003*	24.07 (12.67, 35.48)	90.03 (87.75, 92.31)	16.46 (8.38, 24.63)	93.56 (91.66, 95.47)
	>201	4	4.73 (1.45, 15.4)	0.01*	7.41 (0.42, 14.39)	98.34 (97.37, 99.31)	26.67 (4.29, 49.05)	92.87 (90.96, 94.77)

References

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Results

An sFlt-1/PlGF ratio >110 predicted for birthweight ≤ 10 th centile ($p < 0.001$, OR 3.48, 95% CI 1.85-6.53). Operative delivery for suspected fetal welfare compromise was significantly associated with ratios of >110 ($p = 0.003$, OR 2.77, 95% CI 1.43-5.42) and >201 ($p = 0.01$, OR 4.73, 95% CI 1.45-15.4). There were no statistically significant associations between sFlt-1/PlGF 5-minute Apgar scores or SCN/NICU admission.

Discussion

This study demonstrates the clinical utility of the sFlt-1/PlGF ratio at term in predicting small for gestational age neonates and operative delivery for suspected fetal welfare compromise. It supports a prospective trial to further explore and validate these findings and their clinical management implications.

