

Outcomes of Singleton Pregnancies with Persistently Raised Umbilical Artery Pulsatility Index

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Objectives

This study outlines the characteristics and outcomes of pregnancies with raised umbilical artery pulsatility index (UAPI) (>95th centile). Umbilical artery doppler assessment is a useful tool to determine fetal well-being and predict fetal compromise. UAPI is an assessment of impedance within feto-placental circulation, raised PI (>95th centile) indicates increased placental vascular resistance and helps predict deterioration in the fetal condition. Pathological studies have demonstrated that increased impedance in the umbilical arteries becomes evident only when at least 60% of the placental vascular bed is obliterated. Clear evidence exists regarding the management of the small for gestational age fetus with raised umbilical artery PI, but what are the implications for appropriately grown and large for gestational age babies?

Design

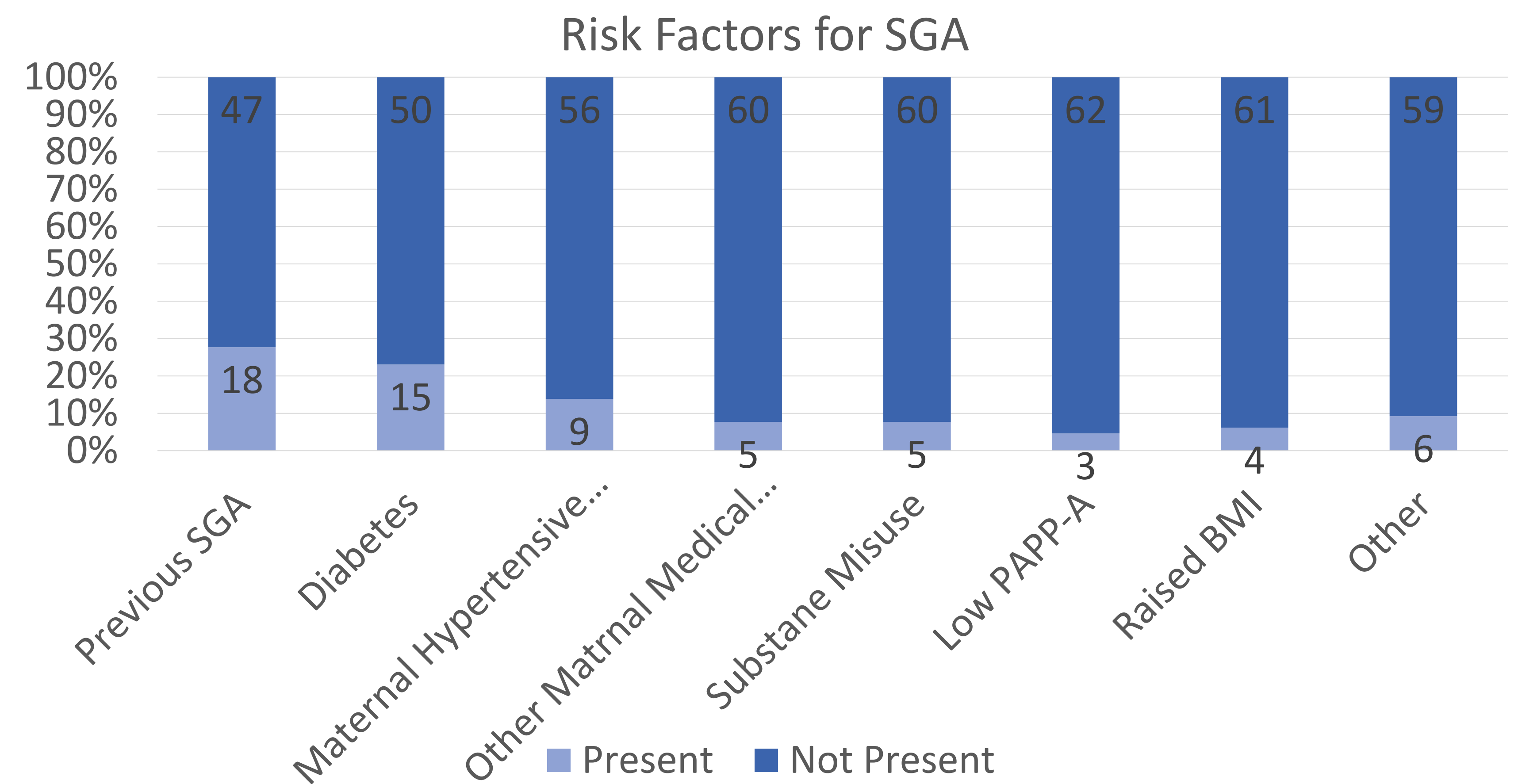
This is a prospective study, providing information regarding risk factors, demographics and maternal and fetal outcomes of pregnancies with raised UAPI.

Methods

Data was collected prospectively June-November 2020. All women with a singleton fetus with umbilical artery pulsatility index > 95th centile were included. Any fetus with known abnormalities was excluded. Maternal and neonatal outcomes were studied.

Results

- 65 patient outcomes were studied.
- 40/65 (61.5%) were of BAME background (reflecting the demographics of the local population).
- 52/65 (80%) had risk factors for SGA, many patients had more than one risk factor.



- 55/65 (84.6%) had raised PI identified in the 3rd trimester.
- 41/65 (63%) had at least one episode of reduced fetal movements during their pregnancy, with half of these patients having multiple episodes.
- 20/23 (86.9%) of patients eligible to receive antenatal corticosteroids received them, 7/9 (77.7%) patients that met the criteria for magnesium sulphate for fetal neuroprotection received it.

- 18/65 (27.7%) of patients delivered preterm.
- 29/65 (44.6%) underwent delivery via caesarean section.
- 27/65 (41.5%) patients PI was raised throughout the pregnancy, 33/65 (50.7%) it had resolved by delivery.
- 30/65 (46.1%) babies were born< 10th centile on customised growth chart, half of these were ‘missed’ i.e. predicted to be appropriately grown after growth scans.

Conclusion

This study demonstrates that raised UAPI is a vital tool in evaluation of the small for gestational age fetus in predicting fetal compromise. In our study, half of SGA babies were ‘missed’, which requires improvement to meet Saving Babies Lives v 2 care bundle. In a significant proportion of pregnancies (53.8%), raised UAPI (>95th centile) is identified in pregnancies in which the fetus is appropriately grown, and there is a lack of evidence and guidance of the implications of this and recommendations for ongoing management. In this context it may represent movement artefact, evolving placental dysfunction, or placental vascular dysfunction (as seen in maternal diabetes) therefore these pregnancies need robust follow up and monitoring.

References

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ISUOG Practice Guidelines: diagnosis and management of small-for-gestational-age fetus and fetal growth restriction
UHB trust guidance – ‘Screening & management of the Small for gestational age fetus
Saving Babies Lives version 2



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