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Low PAPP-A and small for gestational age: Is reduction in PAPP-A cut-off for scan referral safe and cost-effective?

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Objective

Pregnancy-associated placental protein A (PAPP-A) is a glycoprotein produced by the placental syncytiotrophoblast and is responsible for fetal growth regulation. The Royal College of Obstetrics and Gynaecology green top guidelines states a low level (<0. 414MoM) PAPP-A should be considered as a major risk factor for delivery of a Small for Gestational Age (SGA)/Fetal Growth Restricted (FGR) baby. With the introduction of the new growth assessment protocol (GAP) guideline, WMUH is now using PAPP-A <0. 30 MoM for growth scan referral, similar to what other units are currently practicing. 6690 growth scans are performed annually at West Middlesex University Hospital, each costing approximately £160. Reducing our PAPP-A cut off to <0. 30 MoM should be cost effective but would it be a safe approach?.

Methods

We did a retrospective audit over a 20 month period (1. 5. 2014 to 25. 1. 2016). A total of 218 patients with a Low PAPP-A (<0. 41 MoM) were identified. Booking, antenatal, delivery and growth scan data was obtained using CMIS and RAD centre. Data was split using PAPP-A cut offs of ≤0. 30 MoM and 0. 31-0. 41 MoM. Those who discontinued care (28), terminated pregnancy (11) or miscarried (5) were excluded. SGA/FGR neonates in each group (≤0. 30 and 0. 31-0. 41 MoM) were identified by plotting their birth weight on customised growth charts. Those with other major risk factors for growth restriction (e. g. pre-eclampsia) were excluded from final analysis. The Fisher exact test was used to determine if there was any statistical difference.

Results

75 (43%) patients had a PAPP-A ≤0. 30 MoM compared to 99 (57%) who had a PAPP-A 0. 31-0. 41 MoM. 86% Vs 100% of SGA/FGR were picked up on antenatal growth scans in the ≤0. 30 MoM group and 0. 31-0. 41MoM group respectively. 9. 3% in ≤0. 3 MoM group compared to 4. 0% in the 0. 31-0. 41 MoM group had demonstrated SGA/FGR on customised growth charts (birth weights <10th centile). The degree of SGA/FGR (<5th centile Vs 5-10th centile) in both groups was assessed and found not to be statistically significant (P=0. 1091, P=<0. 5 being statistically significant). There was no statistical significant difference in SGA/FGR rates between both groups (P=0. 2106, P=<0. 5 being statistically significant).

Conclusion

PAPP-A levels between 0. 31-0. 41 MoM form 57% of ‘low PAPP-A levels’. Not performing growth scans in this group would significantly save costs for the department (approximately £28320 annually). However, we have demonstrated there is no statistical difference in the rate or severity of SGA/FGR in both groups and thus, for now, this would not be a safe or cost effective approach in the long term. A larger study sample is required to assess this association further.