

Low level of PAPP-A MoM and obstetric outcomes in SGA and AGA babies: a retrospective cohort study

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Objective. To compare obstetric and neonatal outcomes according to PAPP-A MoM at combined tests.

Materials and Methods. Retrospective cohort study of all combined tests performed in singleton pregnancies at the same institution between 2015 and 2021 with available pregnancy outcomes. The following was recorded for all women and babies: age and BMI, mode of conception, free-betaHCG and PAPP-A values and MoM, CRL, NT and the risk for T21, T13 and T18, Gestational Age (GA) at delivery, birthweight, Apgar at 5 min, arterial pH (pHa) and base excess (BE), need for NICU, blood loss at birth. We defined adverse neonatal outcomes if any of the following occurred: Apgar < 7 at 5', pHa < 7.10, BE < -10 and NICU admission. We planned to compare obstetric outcomes between women with PAPP-A MoM above or below 0.42 MoM (5th cle).

Results. 1826 records were available; among these, 76 (4.2%) women had PAPP-A MoM < 5th cle, which did not differ according to mode of conception, maternal age or BMI ($p > 0.05$). Results of combined tests and obstetric outcomes according to PAPP-A MoM are shown in **Table 1**. We decided then to compare obstetric outcomes after excluding all SGA ($n = 201$, 11%). Having a PAPP-A MoM < 5th remained associated with lower free-betaHCG MoM ($p = 0.004$), lower blood loss at delivery ($p = 0.015$) and lower birthweight ($p = 0.033$) but also increased the risk of adverse composite neonatal outcome (OR 2.1, 95%CI 1.1-4.1, $p = 0.028$).

Conclusions. AGA babies with PAPP-A MoM < 5th cle at combined tests have an increased risk of adverse composite neonatal outcome, warranting further investigations.

Table 1.

	PAPP-A MoM ≤ 5 th centile (n=76)	PAPP-A MoM > 5 th centile (N=1750)	p-value
Spontaneous Conception (n, %)	3 (3.9)	100 (5.7)	.51
Maternal age (median, IQR)	32.7 (30.1-35.5)	33.2 (30.2-36.3)	.44
Maternal BMI (median, IQR)	22.1 (20-25.5)	22.2 (20.1-25)	.80
Free-betaHCG MoM (median, IQR)	0.65 (0.44-1.02)	0.94 (0.65-1.31)	<.001
High chance of T21 (n, %)	16 (21.1)	18 (1)	<.001
High chance of T18 (n, %)	5 (6.6)	4 (0.2)	<.001
High chance of T13 (n, %)	3 (3.9)	1 (0.1)	<.001
GA at delivery (median, IQR)	39.0 (38.2- 40.6)	39.4 (38.4-40.6)	.002
Blood Loss (median, IQR)	250 (200-500)	300 (200-400)	.011
Birthweight (median)	3120 (2653.8- 3417.5)	3290 (2993.8- 3580)	<.001
SGA (n, %)	18 (23.7)	183 (10.5)	<.001 OR 2.66 (CI95% 1.5-4.6)
Composite adverse neonatal outcome (n, (%))	13 (17.1)	184 (10.5)	0.07