Are first trimester ultrasound features prior to 11 weeks gestation and maternal factors able to predict gestational hypertensive disorders?

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Aims

• Current early prediction of PET is conducted at 11-13+6 weeks gestation in conjunction with first trimester screening for aneuploidy.
• To determine if ultrasound measures <11 weeks gestation are associated with PIH/PET.
• Can these ultrasound measures in conjunction with maternal characteristics and biochemistry improve the prediction of PIH/PET?

Methods

• Prospective cohort study
• Conventional ultrasound measures: CRL, MSD, YSD and FHR
• Novel ultrasound measurements: TT, TV (Figure 1) and meanUAPI.
• FβhCG, PAPP-A, αFP and PIGF (10-14 weeks).
• Multiples of the median (MoM) values were compared between cohorts that had a normal outcome or developed PIH.

Results

• Normotensive: n=1086, PIH: n=55 (PET: n=6)
• Predictive variables:
  • maternal weight (p<0.0001) TV (p=0.006)
  • PAPP-A (p=0.031)
  • PIGF (p=0.044)
  • FHR (p=0.05)

Logistic regression model:

TV (MoM) (p=0.005)
maternal weight (p<0.0001)
maternal height (p=0.008)
FHR (MoM) (p=0.010)
PIGF (p=0.009)

AUC: 80 (95%CI:0.75-0.86)
FPR: 10%; sensitivity: 43% (27-59)
NPV: 97.2%.

Conclusion

This is the first study to demonstrate a relationship between TV measured prior to 11 weeks and PIH. Combining TV and maternal factors may prove to be of value for the prediction of PET prior to what has been previously possible.