19th World Congress in Fetal Medicine

First trimester predictors of spontaneous preterm birth in women with congenital uterine anomalies

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Objective

Congenital uterine anomalies (CUAs) are embryological abnormalities of the female genital tract affecting an estimated 5% of women. Women with CUA have increased risk of spontaneous preterm birth (sPTB) and preterm prelabour rupture of membranes (PPROM), as well as early and mid-trimester pregnancy loss. There is conflicting evidence as to whether cervical length (CL) surveillance predicts sPTB in women with CUA. We performed this study to determine whether first-trimester assessment of CL assists in predicting sPTB in women with CUA.

Methods

This was a retrospective case control study performed at a metropolitan hospital in Sydney, Australia. Women who were seen with a diagnosis of CUA between 2010-2021 were identified from the Fetal Medicine (Viewpoint) and maternity (Cerner Powerchart) medical records. CUA was defined either through through reported obstetric and gynaecological history on a previous in house gynaecological ultrasound or sonohysterogram. The cohort included women who delivered >20^{+0} weeks gestation and excluded pregnancies without outcome data and multiple pregnancies. A control group was matched based on delivery date. 167 women with CUA and 169 controls were included. CL measurement was included where available for women who underwent in-house first trimester (11^{+0}-13^{+6} week) or mid-trimester morphology (19^{+0} - 23^{+0} week) ultrasound screening. CL was measured in the standardised fashion described by the Fetal Medicine Foundation. Where multiple scans were performed within specified gestational intervals, the shortest documented CL measurement was taken. A short cervix was defined as <25mm at any time point. First line prophylaxis sPTB in women with a short cervix was progesterone 200mg PV nocte. Maternal demographic, pregnancy outcome and neonatal data were collected from the maternity database. Logistic regression and receiver operator curves (ROC) were generated to examine associations between cervical length and spontaneous preterm birth. The statistical software package SPSS 26.0 was used for analysis.

Results

Women with CUA were more likely to have sPTB <34 weeks (4.8% vs 0.6%; p=0.02) and <37 weeks (7.8% vs 2.4%; p=0.02), despite also being more likely to receive prophylactic progesterone therapy (11.4%. vs 1.8%; p<0.001). Women with CUA were also higher risk for other adverse outcomes including abruption (3.0% vs 0%; p=0.02) and stillbirth (3.0% vs 0%; p=0.03). Logistic regression showed that first-trimester CL was predictive of sPTB <37 weeks in women with CUA (p=0.03) but that mid-trimester CL was not (p=0.17). ROC analysis showed that first-trimester CL had an AUC of 0.816 for sPTB <37 weeks in women with CUA, but mid-trimester CL performed poorly with an AUC 0.565.

Conclusion

First-trimester CL measurement appears promising in predicting sPTB in women with CUA, a population in which conventional risk prediction with mid-trimester CL measurement performs suboptimally. Future research should include novel predictive markers in predicting risk of sPTB in high-risk groups.