

BACKGROUND

- Premature ventricular contractions (PVCs) are the second most common form of ectopy found with fetal echocardiography and are considered relatively benign.¹
- A higher burden of PVCs has been correlated with underlying neonatal heart disease.²
- Fetal Magnetocardiography (fMCG), is a non-invasive and safe diagnostic tool that detects and records beat to beat heart rhythm patterns of fetuses > 15 weeks GA.

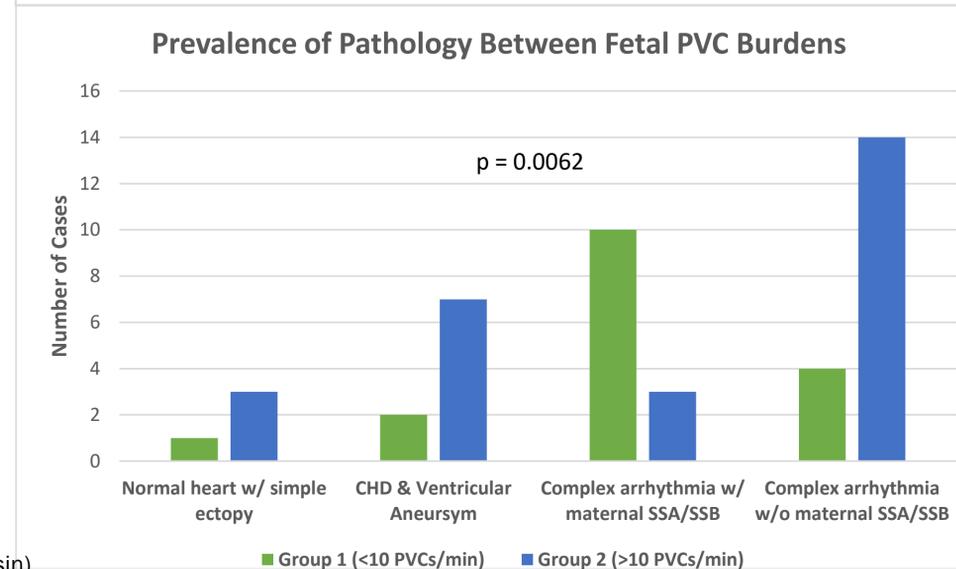
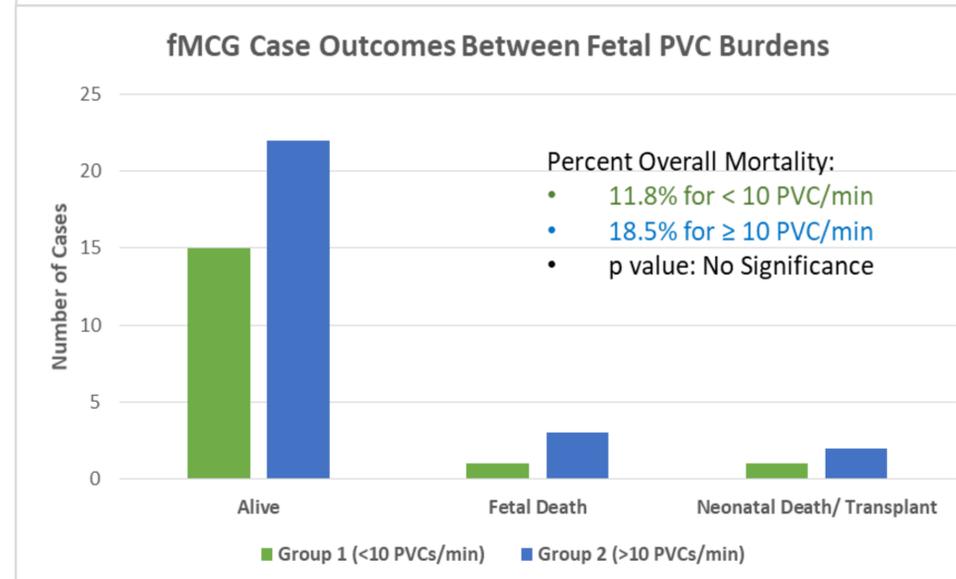
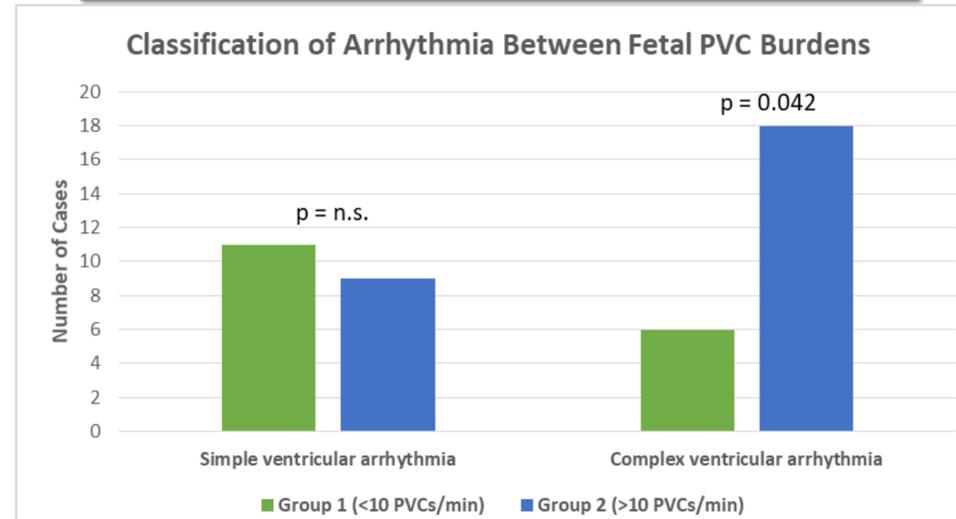
HYPOTHESIS

- An increased frequency of fetal ventricular ectopy would be associated with a higher incidence cardiac structural pathology, complex arrhythmia, or fetal demise compared to those with less frequent PVCs on fMCG study

METHODS

- Retrospective single center descriptive review of fMCG studies obtained between 2010-2020 and identified 44 studies showing PVCs.
- Waveform morphology, cardiac time intervals³, and associated arrhythmias were assessed by 2 pediatric cardiologists.
- Simple ventricular arrhythmia – PVCs, Bigeminy, and Trigeminy
- Complex ventricular arrhythmia - Couplets, Triplets, Ventricular Tachycardia, and Torsades de pointes
- Standard comparison analysis was done to evaluate for differences between the 2 groups: Group 1 (<10 PVCs/min) and Group 2 (>10 PVCs/min)
- Chi-squared and Fisher's exact test was used to compare the categorical variables.

RESULTS



RESULTS CONTINUED

- Group 1 had 17 cases and Group 2 had 27 cases
- Mean GA at fMCG study: Group 1: 27.6, Group 2: 29.7
- Mean GA at delivery: Group 1: 36, Group 2: 36.7
- All fetal deaths found to have non-immune 2nd degree AV heart block and LQTS.
- One ventricular aneurysm case underwent Heart Tx
- Group 2 had more structurally abnormal hearts (16%) compared to Group 1 (4.5%)
- Group 2 had all cases of ventricular aneurysms
- Heart block (non- and isoimmune) in 76% of Group 1
- Prolonged QTc >500ms was noted in 43% of all studies

Conclusion

- A fetal PVCs frequency ≥ 10/min found to have more complex ventricular arrhythmia.
- Fetal PVCs should not be considered entirely benign with study's overall mortality of 17%.
- Fetal PVCs were associated with prolonged QTc
- Study may impact the practice of obstetricians and maternal fetal medicine specialists regarding fetal PVCs (avoidance of QTc prolonging meds or increased detection of fetal abnormalities by echocardiography, such as subtle ventricular aneurysms).⁴
- fMCG provides a noninvasive means of analyzing complex arrhythmia in utero and enables a more accurate diagnosis.⁵

REFERENCES

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