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Title: The prognostic significance of the 12-lead ECG in peripartum cardiomyopathy

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Introduction: Peripartum cardiomyopathy (PPCM) is an important cause of pregnancy-associated heart failure, which appears in previously healthy women towards the end of pregnancy or within five months following delivery. Although PPCM is a rare condition, it remains a significant contributor of maternal morbidity and mortality worldwide. The predictive value of the electrocardiogram (ECG) - a widely available tool in most clinical settings globally - has not been established in PPCM.

Objectives: We aimed to determine the prognostic value of the ECG in the outcome of patients with PPCM.

Methods: We analysed the 12-lead ECGs of patients with PPCM taken at the index presentation and 6 month follow-up visit. Poor outcome was determined by the composite endpoint of death, readmission, remaining in NYHA functional class III/IV or having a left ventricular ejection fraction (LVEF) of ≤35% at follow up.

Results: This cohort of 66 patients with PPCM had a median age of 28.59 (IQR 25.43-32.19). The majority were of Black African ethnicity or mixed ancestry. The median LVEF at presentation was 33% (IQR 25-40), which improved significantly by the 6 month follow up visit (LVEF 49% (IQR 25-40), $P<0.001$). Poor outcome occurred in 27.91% of the cohort. The median heart rate was 87bpm (IQR 71-102) at index presentation. Whereas sinus tachycardia (>100bpm) at baseline was a predictor of poor outcome (OR 4.89, 95% CI 1.17- 20.41, $P= 0.030$), sinus arrhythmia was associated with a better outcome (log rank $P<0.001$). We did not detect any atrial fibrillation. While a quarter of patients met Sokolow-Lyon criteria for left ventricular hypertrophy (LVH) on the ECG, echocardiography did not detect evidence of LVH in any of these patients. T wave inversion was frequently encountered at baseline (70.77%). Although T wave inversion in any lead was associated with an LVEF ≤35% at presentation ($P= 0.038$), it did not predict poor outcome at 6 months ($P= 0.946$). A prolonged QTc interval at presentation was found in almost half of the cohort. On multivariable logistic regression analysis, a prolonged QTc interval at baseline was an independent predictor of poor outcome at 6 months (OR 6.34, 95% CI 1.06-37.80, $P= 0.043$).

Conclusion(s): Sinus tachycardia and a prolonged QTc interval at baseline were predictors of poor outcome in PPCM. Although T wave inversion was commonly present at presentation and was associated with an initial LVEF ≤35%, it did not predict outcome.