B1-5: Electrocardiogram Screening for Cardiovascular Risk Factors in Overweight-Obese Youth with Prediabetes and Elevated Blood Pressure

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Abstract:
Introduction: The American Diabetes Association suggests that 1 in 6 overweight youth has prediabetes; associated with increased cardiovascular (CV) risk. The purpose of this ancillary
study was to examine the effects of prediabetes and blood pressure (BP) on QTc duration and left ventricular hypertrophy (LVH) in overweight-obese youth, assisting healthcare providers to determine the usefulness of electrocardiogram (ECG) measures in identifying CV risk factors.

**Method(s):** Overweight-obese youth (N = 128), 11-18 years, (60.2% black, 63.3% female) were included in this ancillary study. BMI > 85th or > 95th percentile was considered overweight/obese respectively. Prolonged QTc interval (> 0.440 sec in males and > 0.460 sec in females) and Cornell voltage (Sv3 + RaVL) measurements for LVH were obtained and validated by a Pediatric Cardiologist using the 12-lead ECG. LVH was considered if SV3+RaVL was > 2.8mV (males) and > 2.0mV (females). It was hypothesized that subjects with prediabetes (fasting blood glucose between 100-126mg/dl or 2-hr post-load glucose between 140-200mg/dl) and elevated BP (systolic or diastolic BP > 90th percentile) would have more prolonged QTc and higher measures of Cornell voltage than non-prediabetic and non-hypertensive peers.

**Results:** In the total sample, 28% had prediabetes (IFG=16.4% and IGT=11.7%), 10.2% had prolonged QTc, 51% met criteria for elevated BP, and none met Cornell criteria for LVH. No significant difference was noted between prediabetes groups for QTc or Cornell voltage, and there was no significant difference in QTc between BP groups. Overweight-obese youth with elevated BP displayed significantly higher measures of Cornell voltage than non-hypertensive peers (0.95mV vs. 0.76mV, p=0.004).

**Discussion & Conclusions:** Studies suggest obesity may be one of the most common causes of prolonged QTc, which could have contributed more to QTc prolongation in 10.2% of the sample than prediabetes or elevated BP alone. Findings also suggest elevated BP contributes to LVH risk. Additional research examining prediabetes and BP with the inclusion of normal weight youth is warranted to determine with more distinction the overall impact of prediabetes and elevated BP on ECG measures of QTc duration and Cornell voltage for LVH.

**Abstract History:**
This abstract has not been presented or accepted for presentation in whole or in part at the SNRS or other scientific meeting.

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