corrected QT interval was 66±13 bpm and 468±36 msec in LQTS patients, and 74±15bpm and 423±24 msec in control patients. After training, the model was able to identify congenital LQTS with an area under the curve (AUC) of 0.71, sensitivity 53%, and specificity 83% using lead I alone. Using the full ECG (8 non-augmented leads combined), the model identified congenital LQTS with an AUC of 0.83, sensitivity 87%, and specificity 73% (Figure 2A-B). For patients with normal baseline QTc (< 480 ms in females and < 470 ms in males, n=30), the model had comparable performance with an AUC of 0.85, sensitivity 87%, and specificity 80% (Figure 2C). Additional analyses demonstrated moderate accuracy in differentiating LQTS genotypes (AUC 0.76, sensitivity 57%, specificity 100%; Figure 2D).

CONCLUSION: Deep neural networks can be employed for the detection of congenital LQTS on ECG with moderate accuracy using a single-lead ECG alone, and good accuracy with a full 12-lead ECG (8 non-augmented leads). Future work includes developing a model to incorporate additional demographics and to effectively distinguish between LQTS. Deep neural networks are promising methodology for identifying LQTS and differentiating LQTS genotypes using ECG alone.

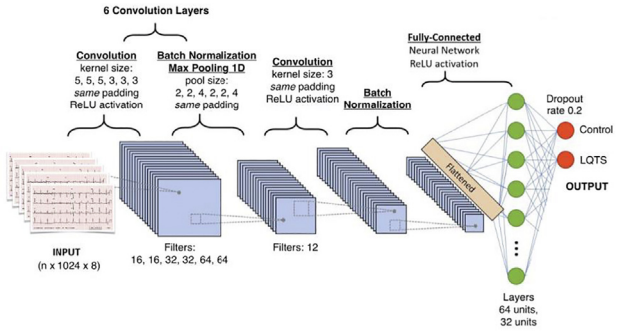

Figure 1. Deep neural network architecture. An abstraction of the network architecture, consisting of 7 convolution layers, each with a batch normalization, max pooling 1D, and rectified linear units (ReLU) activation step, which was followed by a fully connected neural network with batch normalization, dropout, and ReLU activation. The output is the predicted diagnosis (control vs. LQTS).

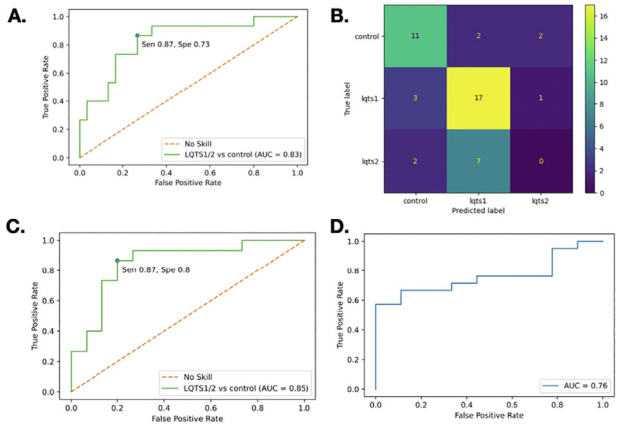

Figure 2. Neural network predictions. (A) Receiver-operator curve for distinguishing LQTS vs. control. **(B)** Confusion matrix of neural network predictions. **(C)** Receiver-operator curve for LQTS vs. control for patients with normal baseline QTc. **(D)** Receiver-operator curve for distinguishing LQTS genotypes 1 and 2.

P072
DIAGNOSTIC UTILITY OF HOLTER MONITORING IN CATECHOLAMINERGIC POLYMORPHIC VENTRICULAR TACHYCARDIA

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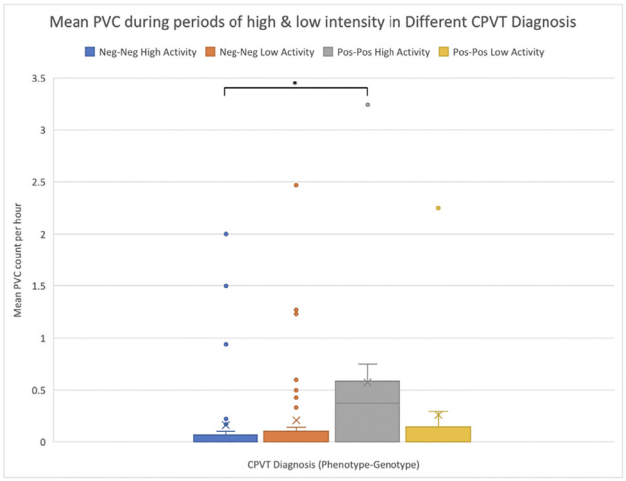
BACKGROUND: Catecholaminergic polymorphic ventricular tachycardia (CPVT) is a rare genetic arrhythmia predisposing to a high risk of sudden death during periods of adrenergic stress. The diagnosis hinges on the exercise stress test, which induces progressive polymorphic and bidirectional ventricular arrhythmias in affected patients. Genetic testing usually identifies a missense variant in the cardiac ryanodine receptor (RyR2). When arrhythmia symptoms are reported by patients, it is also common to perform a Holter monitor, which may identify ventricular arrhythmias. The scope and nature of ventricular arrhythmias during Holter monitoring to identify CPVT patients has not been assessed. To address this uncertainty, we sought to compare the characteristics of PVCs in CPVT patients to healthy controls during Holter monitoring.

METHODS AND RESULTS: In this retrospective study of the National Hearts in Rhythm Organization (HiRO) registry, we analyzed 94 24-hour Holter recordings from 55 healthy controls (genotype and phenotype negative) and 39 CPVT-affected patients (RyR2 variant positive, and CPVT phenotype positive). No patients were on CPVT therapy during the recordings. We used the Borg cardiorespiratory intensity scale to correlate heart rate during Holter monitoring with the level of exertion. A cut-off of 76% of maximal heart rate was defined to separate periods of adrenergic and non-adrenergic stress. Mean PVCs during the two separated episodes were plotted on a boxplot and compared using the nonparametric Anderson-Darling K-Sample test across both populations. Within periods of "low" activity, the mean PVC count between healthy controls and CPVT-affected patients did not differ. However, during periods of "high" activity, the mean PVC was significantly higher in CPVT-affected patients compared to control (p=0.041).

CONCLUSION: The Holter monitor may have diagnostic utility in CPVT when PVCs occur during periods of elevated heart rate. However, a high burden of PVCs during rest (i.e. ambient PVCs) largely precludes a diagnosis of CPVT. If patients with CPVT are not under adrenergic stress during the recording period, the Holter monitor is likely to miss the diagnosis. These data suggest that an in-depth analysis of the Holter monitor, including temporal and adrenergic state, is necessary to determine the probability of CPVT.

Parameter		Patient Cohort	
		CPVT-Affected	Healthy Controls
Median Age		45	44
Male-Female Ratio		0.48	0.61
Major ETT Arrythmia		Mono/poly PVC	None (No Ventricular Ectopy)
Average Holter Reported max HR		151.7 ± 45.4	144.1±17.27
Mean Holter PVC Burden		1.4 ± 2.6 %	0.05 ± 0.22 %
Major PVC Morphology		Polymorphic	Monomorphic
Referral Reason	% Symptomatic	61.3	3.5
	% Asymptomatic	38.7	96.5
IQR for PVC during Adrenergic Stress (Above 0.76 max HR)	Min	0.00	0.00
	1st Quartile	0.00	0.00
	Median	0.37	0.00
	Mean	0.58	0.16
	3rd Quartile	0.42	0.05
	Max	3.24	2.00
IQR for PVC during Non-adrenergic Stress (Below 0.76 max HR)	Min	0.00	0.00
	1st Quartile	0.00	0.00
	Median	0.00	0.00
	Mean	0.26	0.21
	3rd Quartile	0.10	0.08
	Max	2.25	2.47



P073
EFFICACY AND SAFTEY OF SUPRACLAVICULAR AND PECTORALIS NERVE BLOCKS AS PRIMARY PERI-PROCEDURAL ANALGESIA FOR CARDIAC ELECTRONIC DEVICE IMPLANTATION: A PILOT STUDY

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BACKGROUND: Cardiac implantable electronic devices (CIED) are routinely implanted using intravenous drugs for sedation. However, some patients are poor candidates for intravenous sedation. We present a case series that demonstrates the safety and efficacy of a novel, ultrasound-guided nerve block technique that allows for pre-pectoral CIED implantation in high-risk patients. The targets are the supraclavicular nerve (SCN) and pectoral nerve (PECs1).

METHODS AND RESULTS: We enrolled 20 patients who were planned for a new CIED implantation at LHSC. Following ultrasound guided-localization of the SCN and PECS1, local anesthetic (LA) was instilled at least 30-60 minutes pre-procedure. Successful nerve block was determined if less than 5ml local anesthetic was used intraprocedurally, in addition to lack of sharp sensation with skin (SCN) and deep tissue pin-prick (PECS1). The majority of patients (n=17, 85%) had successful periprocedural nerve block, with only 3 patients exceeding 5ml of LA. SCN and PECS1 success occurred in 19 (95%) and 19 (95%) patients, respectively. Only 8 patients (40%) received IV midazolam (mean dose 1.07 mg, SD ± 0.6) and fentanyl (mean dose 35.7mcg, SD ± 13.3) With the exception of 1 patient, all patients reported a low Visual Analogue Score (0-2) immediately after, at 1 hr and 1 day post-procedure. There were no reported major adverse effects.

CONCLUSION: SCN and PECS1 nerve block is safe and effective for patients undergoing CIED implantation to minimize or eliminate the use of intravenous sedation. A comparison study with the standard of care is needed to assess whether routine use of this technique improves patient outcomes.

P074
FEMALE SEX IS NOT ASSOCIATED WITH INCREASED SURVIVAL AFTER NON-TRAUMATIC OUT OF HOSPITAL CARDIAC ARREST: A SYSTEMATIC REVIEW AND META-ANALYSIS

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BACKGROUND: Survival after out of hospital cardiac arrest (OHCA) remains low and there is increasing interest to determine if female sex is an important prognostic factor. Large prospective studies have demonstrated that females compared to males do not have improved survival to discharge. However, systematic reviews have reported significant survival benefits for females compared to males. The findings of these reviews may not be generalizable due to restricted inclusion criteria and pooling of adjusted and unadjusted effect estimates. This systematic review evaluates the relative and absolute associations of female sex with survival to discharge and survival to 30 days after non-traumatic OHCA.

METHODS AND RESULTS: We searched Medline, Embase, CINAHL, Web of Science, Cochrane Central Register of Controlled Trials, and Cochrane Database of Systematic Reviews from inception through June 2021 for published studies that evaluated female sex as a primary predictor or covariate in multivariable models of survival in adult patients with non-traumatic OHCA. Random-effects inverse variance meta-analyses were performed to calculate pooled odds ratios (ORs) with 95% confidence intervals (CI). The GRADE approach was used to assess evidence quality. Thirty studies with 1,068,788 patients were included in the meta-analyses. The proportion of female patients was 41% with an overall range of 19% to 56% and mean age of 65 ± 25 years. The pooled effect estimate did not demonstrate an association for female compared to male sex with survival to discharge (OR 1.03, 95% CI 0.95-1.12; I2=89%). Subgroup analysis of low risk of bias studies demonstrated an association between female sex and increased survival to discharge (OR 1.20, 95% CI 1.18-1.23; I2=0%) (Table 1). With high certainty in the evidence,