DIFFERENCES IN ELECTRICAL SUBSTRATE IN PATIENTS WITH CARDIAC AMYLOIDOSIS MAY PREDICT ARRHYTHMIA RISK

Poster Contributions
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Background: Cardiac amyloidosis (CA) is associated with an increased risk of sudden cardiac arrest (SCA) yet the precise mechanisms are not well understood. Depolarization and repolarization (DR) abnormalities may predict risk of SCA. We sought to determine if differences in DR were present amongst patients with different subtypes of CA compared with normal controls.

Methods: Consecutive patients with biopsy proven amyloid light chain (AL) CA were included and patients with transthyretin (TTR) CA were selected and matched for age and sex. The Tpeak-Tend Interval, QRS duration, T wave duration, S wave duration were measured over 3 consecutive beats in all leads and averaged. and compared to age and sex matched normal controls. Septal thickness was determined by echocardiography and LV mass calculated.

Results: A total of 102 patients (34 AL, 26 familial TTR, 8 wild type TTR, and 34 controls) were included (64 ±11.2 years old, 69 % males). The Tpeak-Tend interval was significantly longer in AL and TTR (combined familial and wild type) amyloid compared to controls (97.49 ms ± 8.09, 108.86 ± 21.21 ms, 78.51 ± 7.44 p < 0.0001, respectively). T wave duration was longest in TTR (223.46 ms ± 39.40 ) compared to AL (194.79ms ± 16.78) and controls (167.58 ms ± 12.00 p<0.0001. Similarly, the S wave duration was longest in AL (46.81 ±8.91 ms) compared to TTR (52.83 ± 26.4 ms) and controls (38.54 ± 6.56, p = 0.002). However, the QRS duration was not statistically different amongst the three groups (97.45 ms ± 16.2 (TTR) , 97.54 ms ±12.06 (AL), 94.85ms ± 9.84, p=0.584). None of the measured ECG intervals correlated with septal thickness (p=0.147) or left ventricular mass (p=0.712).

Conclusion: Significant DR abnormalities are present in patients with CA and differ amongst subtypes of CA when compared to normal controls. Such differences may provide incremental prognostic information beyond septal wall thickness for risk stratification of patients with CA.