



INCREASED QT VARIABILITY INDEX IS ASSOCIATED WITH MORTALITY IN INCIDENT HEMODIALYSIS PATIENTS

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Background: Risk stratification in end-stage renal disease (ESRD) is needed to improve outcomes in patients on hemodialysis. Increased QT variability index (QTVI) is a well-known risk marker. We hypothesized that QTVI is associated with mortality in incident hemodialysis patients.

Methods: Orthogonal ECG was recorded at rest in a prospective cohort of incident hemodialysis patients. Premature atrial and ventricular beats with one subsequent sinus beat were excluded. Beat-by-beat QT and RR intervals were measured by customized Matlab software. Sinus rhythm 5-min ECGs were analyzed. QTVI was calculated as log-transformed ratio of normalized QT variance to normalized heart rate variance. All-cause mortality served as a primary outcome.

Results: Data from 308 participants (mean age 54.4±13.5 y; 58% male; 74% black; mean left ventricular ejection fraction (LVEF) 65.5±11.9%) were analyzed. During 2.4±1.2 years of follow-up, 56 patients (18%) died. In univariable analysis QTVI associated with mortality: HR per 1-standard deviation (SD) 1.3; 95%CI 1.0-1.68; P=0.047. In multivariable Cox regression, after adjustment for age, sex, race, prevalent coronary heart disease (CHD), left ventricular ejection fraction (LVEF), QTVI was associated with higher mortality: HR per 1-SD 1.33; 95%CI 1.01-1.74; P=0.040. HR per range of QTVI values was 4.4; 95%CI 1.08 - 17.78 (Figure).

Conclusion: Increased QTVI is associated with mortality in incident hemodialysis patients after adjustment for LVEF and prevalent CHD.

