Echocardiographic Characteristics Not Predictive of One-Year Mortality in Patients Starting Hemodialysis

Written by Maria Vinall

R. Rodriguez, MBBS, San Fernando General Hospital, San Fernando, Trinidad and Tobago, presented the results of a study that showed no strong correlation between transthoracic echocardiographic measurements at the commencement of hemodialysis and mortality at 1 year.

The study involved a retrospective chart review of all patients (n=40; mean age 52 years) who began hemodialysis between January 1, 2008 and December 1, 2009 at San Fernando General Hospital. The objective was to determine whether echocardiography provided any findings that were predictive of mortality. Mortality at 12 months and the presence of diabetes mellitus, hypertension, and other risk factors were documented. The following echocardiographic parameters were assessed: left ventricular diastolic and systolic diameter (LVIDd and LVIDs), left atrial diameter (LAD), interventricular septal diameter (IVDS), left ventricular posterior wall diameter (LVPWd), and ejection fraction (EF).

The 12-month mortality rate was 57.5%. Thirty (75%) patients had diabetes mellitus, 33 (82.5%) had hypertension, 30 patients (72%) had both diabetes mellitus and hypertension, and 9 (22.5%) had other risk factors. Most patients (80%) had 2 risk factors. Echocardiographic parameters are shown in Table 1.

Table 1. Echocardiographic Parameters.

	Mean + SD	Linear Regression r^2	p value
EF, (%)	58 + 11	0.00	0.68
LVIDd, (mm)	5.4 + 0.84	1.03	0.28
LVIDs, (mm)	3.7 + 0.75	0.01	0.5
LVPWD, (mm)	1.04 + 0.2	0.00	0.74
IVSd, (mm)	1.11 + 0.19	0.01	0.52
LAD, (cm)	3.96 + 0.71	0.01	0.5

EF=ejection fraction; LVIDd=left ventricular diastolic diameter; LDIDs=left ventricular systolic diameter; LVPWD=left ventricular posterior wall diameter; IVSD=interventricular septal diameter; LAD=left atrial diameter.

Although no strong correlation was observed between echocardiographic parameters and mortality for the entire population, when data for patients who died within 12 months were analyzed separately, the correlations of 1-year mortality and LVIDd (r^2=0.05) and LAD (r^2=0.04)

were improved. There were no other important changes in the relationship with other echocardiographic parameters.

Although limited by its small size, this study suggests that hypertension is the most common comorbidity in patients with end-stage renal failure who commence hemodialysis at the San Fernando General Hospital. This modestly sized study was notable for a very high rate of mortality and a low proportion of patients with severe left ventricular function, an echocardiographic characteristic that has been clearly associated with outcomes in the existing literature. The authors note that other, potentially correctable factors may be responsible for the high 12-month mortality that was seen in this study and merit further investigation. While these preliminary findings require validation, they do raise the question of whether routine transthoracic echocardiography in patients who commence hemodialysis is useful in predicting subsequent mortality.

Association Between Altered Lipid Profile and Uric Acid with Risk of MI in Patients in Trinidad and Tobago

Written by Rita Buckley

In 2004–2005, Trinidad and Tobago had the highest percentage of deaths from cardiovascular disease (CVD) and diabetes in the Caribbean [Chinnock P. *Caribbean Health* 2001]. Patients with diabetes or hypertension are at higher risk of CVD with worse outcomes than nondiabetic individuals [Falko JM et al. *Curr Diabetes Rev* 2005]. High uric acid levels are also a risk factor for insulin resistance syndrome [Bonora E et al. *Eur J Clin Invest* 1997].

Nalini Maharaj and colleagues from the University of the West Indies, Trinidad and Tobago, presented a poster on altered lipid profile and serum uric acid with the risk of myocardial infarction (MI) among diabetic and nondiabetic hypertensive patients. The primary objective was to improve understanding of the associations among altered lipid profile, serum uric acid, and the risk of MI.

The study included 672 adults who were treated for hypertension in public health clinics between 2005 and 2009. Health records were used to obtain each patient's history, lipid levels, blood pressure, and serum uric acid values.

The prevalence of MI was 25.45%, with males accounting for 52.6% and females accounting for 47.4%. The modal age group for MI was 61 to 70 years. MI rate was higher

in hypertensive type 2 diabetics with altered lipid profiles (23.9%) than in nondiabetic hypertensive patients (7.7%). Diabetes (OR, 3.741), altered lipid profile (OR, 13.096), and age group (OR, 1.444) were all associated with an increased odds of MI. Increasing serum uric acid quartile (p=0.029) was also associated with MI.

The data suggest that altered lipid profile and elevated serum uric acid are associated with MI in hypertensive patients with diabetes. While dyslipidemia is an established risk factor for MI and a current therapeutic target, further studies that adjust for other clinical and laboratory covariates are needed to understand if serum uric acid is an independent predictor of MI and whether this measurement is a useful clinically in directing therapeutic decision-making.

Evaluating the Asymptomatic Patient for CV Risk Factors

Written by Rita Buckley

Cardiovascular disease (CVD) is the number one cause of death in Trinidad and Tobago [http://www.health.gov.tt]. CVD risk scoring methods can be used to identify patients who are asymptomatic but at a high risk of developing CVD in the future. However, the generalizability of risk scores in different populations can not be assumed [Beswick AD et al. London: Royal College of General Practitioners (UK) 2008]. K. Singh, I. Ogeer, R. Bachus, and K. Mungrue, University of the West Indies, Trinidad and Tobago, presented a poster on the Evaluation of Cardiovascular Risk Factors in Asymptomatic Individuals in a Trinidadian Community. The primary objective of the study was to evaluate cardiovascular (CV) risk factors in asymptomatic individuals.

Framingham risk score models have performed well in United States populations but do not predict risk as well when applied to populations that are substantially different from the source cohort [Matheny M et al. Agency for Healthcare Research and Quality (US) 2011]. Qrisk, which was developed in Great Britain, encompasses traditional and newer risk factors, such as atrial fibrillation and rheumatoid arthritis. Singh et al. used a cross-sectional design and pretested questionnaire to collect data from 151 participants on relevant CV risk factors.

Outcomes showed that 6.6% of participants had a Qrisk score >20; 23 (15%) were current smokers; and 50.7% consumed alcoholic beverages. In addition, a large proportion consumed a Western-style diet only; 51.6% did not engage in physical activity; and only 48% ate fruits on a regular basis.

The authors concluded that a significant proportion of asymptomatic patients have risk factors, as identified using the Qrisk score, and underscored the need for effective prevention strategies. As CV outcomes were not followed, it is unclear whether the Qrisk score performed better than the Framingham risk score in this population.

The Occurrence of LVH In Normotensive Individuals In A Community Setting In Northeast Trinidad

Written by Maria Vinall

The performance of the Cornell or Sokolow-Lyon voltage criteria, which were established in the developed world from populations of vastly different ethnic backgrounds, has not been evaluated for the detection of left ventricular hypertrophy (LVH) in Trinidadians. In the first study of its kind to be conducted in Trinidad, the estimated prevalence of LVH appears to be relatively high if ECG is the single investigation that is performed. However, it approaches a value that is similar to that in the literature when echocardiography (ECHO) is performed. Romel Bacchus, MD, University of West Indies, Mt. Hope, Trinidad, presented poster data that showed the value of using ECHO in individuals who are suspected of having LVH.

LVH is an independent predictor of cardiovascular morbidity and mortality and can occur in normotensive individuals or those without any recognized underlying pathology. Healthy participants (n=209) with normal blood pressure (<140/90 mm Hg), no previous history of type 2 diabetes or hypertension, or no existing LVH that is confirmed by ECHO were enrolled in a cross-sectional study. The study participants (mostly women in their mid-30s) consisted of Southeast Asians, Africans, and those of mixed descent.

Using ECG and the Sokolow-Lyon criteria, 10.5% of normotensives were diagnosed with LVH, while ECG and the Cornel criteria detected 5.3%. Using the American Society of Echocardiography criteria and World Health Organization criteria, ECHO confirmed the diagnosis of LVH in 2.9% and 1.5% of normotensive individuals, respectively, in both ECG groups. Pearson's correlation coeffficient indicated that the Cornel criteria were a more accurate measurement of LVH compared with the Sokolow-Lyon criteria.