

**Cardiovascular Disease: Diagnostic Modalities, continued**

mm and cardio-thoracic ratio (CTR)  $>.55$  on antero-posterior (AP) chest X-ray (CXR) also have been shown to correlate with patients volume status. The purpose of the study is not describe the correlation between objective findings on AP-CXR with BNP levels and to assess their accuracy in predicting BNP levels.

**METHODS:** Retrospective chart review of patients presented to the ED between August-September 2005 with dyspnea in whom a serum BNP and CXR was available. Of 112 patients, 65 patients were excluded (25 had postero-anterior CXR only, 3 had myocardial infarction, 23 had serum creatinine  $> 2$  gm/dl and 14 patients had CXR and BNP on different dates).

**RESULTS:** 18/47 (38%) were 18 males. Mean age was  $56.7 \pm 12.6$  years, mean ejection fraction (%) was  $42.9 \pm 24.6$ , mean BNP was  $861 \pm 1087$  pg/mL, mean VPW was  $67.4 \pm 11.8$  mm and mean CTR was  $0.61 \pm 0.007$ . Overall, there was a correlation between BNP and CTR ( $r2 = 0.6$ ) but none between BNP and VPW ( $r2 = 0.1$ ). Using a cutoff point of CTR  $> 0.6$  the sensitivity and specificity for predicting a BNP of  $> 230$  was 82% and 95%, respectively. The positive likelihood ratio was 16 whereas the negative likelihood ratio was 0.19. The BNP levels for different categories of CTR (0.47-0.57, 0.58-0.68 and 0.69-80) were statistically different (Figure 1).

**CONCLUSION:** CTR  $> 0.6$  strongly correlates with serum BNP levels and may therefore obviate the need for obtaining a separate BNP level.

**CLINICAL IMPLICATIONS:** Using CTR cutoff  $> 0.6$  may help to minimize ordering unnecessary BNP levels in all patients who present to ED with dyspnea. This may help to decrease the cost of heart failure management.

**DISCLOSURE:** Ather Anis, None.

**EVALUATION OF APPROPRIATENESS OF ECHOCARDIOGRAPHY IN PATIENTS WITH CEREBROVASCULAR ISCHEMIA IN A TERTIARY CARE TEACHING HOSPITAL**

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**PURPOSE:** Cerebrovascular accidents constitute a common indication for echocardiography. ACC/AHA guidelines for the clinical application of echocardiography have been available since 2003. In view of the recent concerns about the uncontrolled growth in cardiac imaging, we investigated the appropriateness of use of echocardiography in cerebrovascular ischemia in a tertiary care teaching hospital using the ACC/AHA guidelines.

**METHODS:** 204 consecutive patients (mean age  $65 + 11$  years, 198 men) with history of transient ischemic attacks (TIA) [94(46%)], and cerebrovascular accidents (CVA) [110(54%)] were screened for the presence of potential cardiac and aortic sources of embolism by either transesophageal [TEE: 109 (53%)] or transthoracic [TTE: 95 (47%)] echocardiography. Risk factors were hypertension (83%), diabetes (40%), smoking (53%), dyslipidemia (61%), and atrial fibrillation (6%).

**RESULTS:** Applying ACC/AHA guidelines in 204 patients, 120(59%) had class I, 23 (11%) had class IIa, 29(14%) had class IIb, and 32 (16%) had class III indication for echocardiogram. Among 95 patients that underwent TTE, the frequency of abnormal findings was as follows: 7(7%) microcavitation, 7(7%) low ejection fraction, 1 (1%) LV aneurysm, 1(1%) LV thrombus, and 1(1%) ASD. Among 109 patients that underwent TEE, the frequency of abnormal findings was as follows: 83 (76%) aortic atherosclerosis, 19(17%) PFO, 8(7%) atrial septal aneurysm, 21 (19%) microcavitation, 7(6%) low ejection fraction, 1(1%) LV thrombus, 1(1%) LV aneurysm, and 1 (1%) vegetation. The management was changed based on echo findings (TEE: 25, TTE: 2) in only 27 patients (13%), all with either class I or class IIa indication.

**CONCLUSION:** TEE identified potentially treatable cardio-embolic sources that changed management more often than TTE (class I and IIa). On applying the current ACC/AHA guidelines 16% of echocardiograms were categorized as class III.

**CLINICAL IMPLICATIONS:** Prior screening for carotid disease and assessment for indications for and contraindications to anticoagulants in patients with TIA/CVA could reduce the frequency of class III studies and reduce costs. More awareness is needed of ACC/AHA indications for echo in cerebrovascular patients.

**DISCLOSURE:** Dipesh Pokharel, None.

**POOR CORRELATION BETWEEN LEFT AND RIGHT VENTRICULAR EJECTION IN PATIENTS WITHOUT CARDIOMYOPATHY**

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**PURPOSE:** Background: Correlation between right and left ventricular ejection fraction has not been studied in patients with or without cardiomyopathy. The goal of this study was to compare right and left ventricular ejection fractions in the patients with or without cardiomyopathy using blood pooled scintigraphy.

**METHODS:** Methods: We studied a series of 152 patients, who underwent left ventricular ejection fraction (LVEF) calculation for a clinical indication and underwent simultaneous measurement of the right ventricular ejection fraction (RVEF). The correlation between right and left ventricular ejection fraction in patients with or without cardiomyopathy were measured using regression analysis.

**RESULTS:** Results: Although, right and left ventricular ejection fractions were significantly correlated in the entire cohort in a S curve mathematical function, the correlation was very poor ( $r = 0.32$ ,  $p < 0.0001$ ). However, the correlation was linear and stronger in patients with Cardiomyopathy (defined as LVEF and RVEF  $< 50\%$ ,  $r = 0.41$ ,  $p < 0.0001$ ) and was completely absent in patients without cardiomyopathy (LVEF and RVEF  $> 50\%$ ,  $r = .001$ ,  $p = 0.86$ ). Strongest RVEF and LVEF correlation occurred in patients with LVEF and RVEF  $< 30\%$ , ( $r = 0.75$ ,  $p = 0.03$ ).

**CONCLUSION:** Conclusion: Only patients with cardiomyopathy have significant correlation between LVEF and RVEF.

**CLINICAL IMPLICATIONS:** The cause of this strong discrepancy between patients with or without cardiomyopathy is not known and warrants future investigation.

**DISCLOSURE:** Mohammad-Reza Movahed, None.

**IMPEDANCE CARDIOGRAPHY IDENTIFIES SUBCLINICAL SYSTOLIC DYSFUNCTION ASSOCIATED WITH OBESITY: A POPULATION-BASED STUDY**

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**PURPOSE:** Obesity is independently associated with the risk of heart failure, but only recent studies with sophisticated echocardiographic techniques have demonstrated subclinical systolic abnormalities in obese subjects without clinical heart failure or depressed left ventricular ejection fraction. Such techniques provide important early markers of subclinical disease but are difficult to implement in large-scale studies or clinical practice. Impedance cardiography (ICG) represents an easily applicable, operator-independent technique to assess cardiac function. The purpose of this study is to determine whether abnormalities of systolic function can be identified in obese subjects with the use of ICG.

**METHODS:** We studied 310 non-institutionalized adults who were unmedicated and free of diabetes or heart failure as part of a population-based study. ICG was performed with the Bio-Z device (Cardiodynamics; San Diego, CA). Simple and multiple linear regression was used to identify associations between body mass index (BMI) and the systolic acceleration index (ACI) and velocity index (VI). To allow direct comparisons, all reported regression coefficients are standardized.

**RESULTS:** Highly significant univariate negative correlations between BMI and VI ( $R = -0.56$ ;  $p < 0.0001$ ) and between BMI and ACI ( $R = -0.51$ ;  $p < 0.0001$ ) were found. After adjusting for age, gender, HDL and LDL cholesterol, triglycerides, heart rate, systolic and diastolic blood pressure and stroke volume, BMI remained an independent negative predictor of both VI ( $\beta = -0.48$ ;  $R2$  increase = 0.18;  $p < 0.0001$ ) and ACI ( $\beta = -0.43$ ;  $R2$  increase = 0.14;  $p < 0.0001$ ). The correlation was also independent of systemic arterial compliance and baseline impedance. In these multivariate models BMI was the strongest predictor of both parameters. The adjusted partial correlation coefficients with BMI were  $-0.47$  for ACI and  $-0.56$  for VI (both  $p < 0.0001$ ). Interestingly, lower HDL levels also predicted lower AI and VI (independently of BMI), indicating that metabolic components associated with insulin resistance may play a role in these systolic abnormalities.