Poster Session 2 (P2)

Monday, June 25, 2018

Table of Results			
	LV thrombus	Non LV thrombus	P value
Global longitudinal strain (%)	-2.3 ± 4.4	-5.1 ± 3.9	0.04
mid anterior strain (%)	-8.0 ± 3.7	-10.6 ± 4.4	0.05
mid anteroseptal strain (%)	-7.7 ± 3.02	-10.9 ± 4.2	0.01
LV apical wall motion score	3.2 ± 0.5	3.0 ± 0.5	0.12
LV Non-apical wall motion score	14.2 ± 4.9	14.3 ± 4.6	0.94

P2-115

Tako-tsubo Syndrome in Acute Myocardial Infarction: Tako-Effect

Juan Lei[1], Megha Dogra[2], Kan Liu[2]. [1]Sun Yat-sen Memorial Hospital of Sun Yat-sen University, Guangzhou, China; [2]State University of New York, Upstate Medical University, Syracuse, NY

Background: Tako-tsubo syndrome (TTS) is a transitional left ventricular dysfunction which is commonly confused with acute myocardial infarction (AMI). The diagnosis of TTS in the setting of AMI with significant coronary stenosis is debatable. The purpose of this study is **t**o evaluate the systolic and diastolic ventricular functions, hemodynamic consequences, short-term (30 days) and long term (1 and 5 years) cardiovascular outcomes in AMI with and without TTS. **Methods:** Between 11/01/2012 and 01/31/2016, 111 patients with left anterior descending artery stenosis causing anterior ST-elevation MI were studied. They were classified into 2 groups: Patients with MI and TTS-like contractile dysfunction and regional wall motion abnormality that extend beyond the territory of the culprit artery (we name it Tako-effect) (31 patients) and patients with MI without Tako-effect (80 patients). Patients with MI and Tako-effect were also compared to 66 consecutive matched patients with TTS without significant coronary artery stenosis. **Results:** Tako-effect patients had significantly lower left ventricular ejection fraction (38.5 ± 6.8% vs. 47.7 ± 8.7%, $P = 0.000$), and significantly higher Tei-index (0.54 ± 0.17 vs. 0.37 ± 0.15, $P = 0.000$) compared to non Tako-effect patients. In contrast, they have no significant difference in the left ventricular filling pressures and right ventricular functional parameters. Also, there was no significant difference in the short term outcomes including hypotension, cardiogenic shock and 30-days mortality between both groups. The long term follow up (1 year and 5 years) showed higher major adverse cardiac events rate in the Tako-effect group mainly driven by the rate of MI and ischemia-driven target lesion revascularization [20 patients (64.5%) vs 34 patients (42.5%), $P = 0.037$]. Tako-effect group also had increased re-hospitalization rate [21 patients (67.7%) vs 36 patients (45.0%), $P = 0.031$]. Patients with MI and Tako-effect had similar LV systolic and diastolic functions and right ventricular functional parameters compared to patients with TTS without significant coronary artery stenosis. **Conclusions:** Patients with acute anterior ST-elevation MI may develop concomitant TTS. Patient with MI and Tako-effect have similar short term but worse long term cardiovascular outcomes compared to Non Tako-effect patients.

P2-116

Inconclusive Cardiac Stress Echocardiography and The Utility of The Double Product in Predicting Outcomes: Early Results

Asaad Nakhle, Charles Hammond, Christopher Giles, Maryam Alimirah, Ramandeep Mand, Mahmoud Ali, Meredith Mahan, Karthikeyan Ananthasubramaniam. Henry Ford Hospital, Detroit, MI

Background: Stress echocardiography (SE) is one of the frequently used methods in assessing for coronary ischemia in patients with chest pain. Inconclusive SE, defined as the inability to achieve ≥ 85% of maximal predicted heart rate (MPHR), poses a challenge for clinicians. The aim of our study is to evaluate patients with submaximal SE and see if the value of the double product (DP) could further delineate long term risk better in this patient population. **Methods:** Six hundred and forty five patients who underwent either chemical or treadmill SE between Jan-June 2013 who had submaximal (< 85%) MPHR were retrospectively reviewed. Demographics, medical history, and cardiac stress testing reports were collected. Then, 4 years adverse outcomes, defined as a development of systolic heart failure, myocardial infarction, and death were documented and analyzed, and additional downstream testing (repeat stress testing, myocardial perfusion imaging, or coronary angiography) were collected. **Results:** Mean age was 59.6 years, and 55% were males. Caucasians represented 47%, and 46% were African Americans (AA). History of myocardial infarction and heart failure was reported in 33% and 19%, respectively. Composite outcome was found in 132 (20%) of all patients. Patients with adverse events were older (64.1, vs. 58.5, P<0.001), males (65.9% males vs. 34.1% females, P 0.004), Caucasian (54.6% Caucasians, vs. 39.4% AA, P 0.044), and with higher incidence of CAD, and CHF. The univariate odds ratio for the relationship between DP and the composite outcome indicated that for every 1,000-unit increase in DP, the odds of an adverse outcome decrease by 9.1% ([5.5% - 12.6%], P<0.001)**. Conclusion:** Inconclusive SE currently poses a dilemma and many times leads to further testing to reach conclusive decisions for presence or absence of CAD Our study showed that younger, AA females, with no history of CAD or CHF, who were able to achieve a higher value of DP, have a favorable long term outcome with less subsequent adverse events or death after 4 years. Thus patients with these characteristics with a negative submaximal SE could be triaged for observation with additional evaluation reserved if they continue to have symptoms. Although traditionally a DP of 24,000 is considered adequate workload DP response may vary for pharmacologic versus exercise stress testing, and thus may help stratify patients when viewed as a continuum.

P2-117

Echocardiographic Findings in 102 Centenarians

Bhavin Dumaswala, Kunal Bhagatwala, Komal Dumaswala, Jamshid Shirani. St. Luke's University Health Network, Bethlehem, PA

Background: Number of centenarians has been on the rise. In 2015, 72,000 centenarians lived in the United States and this number is expected to surpass 1 million by 2050. Cardiovascular disease (CVD) remains the most common cause of death in this population. However, studies of CVD in this population are relatively scarce and there is evidence that CVD is underreported in the oldest old. The goal of this study was to explore the morphologic and functional cardiac abnormalities in centenarians as evaluated by echocardiography. **Methods:** We retrospectively reviewed the echocardiograms of 102 consecutive centenarians aged 100 to 105 (mean 100.4 ± 1.4) years at the time of referral [85% women, 87% hypertensive, 17% diabetic, 25% hyperlipidemic, body surface area 1.2-2.1 (1.6 ± 0.2) m^2, body mass index 15.1-41.7 (24.9±4.5) kg/m^2, 33% overweight, 12% obese] referred to our laboratory for echocardiography between 2010 and 2017. **Results:** The following CVD were present by history: heart failure 56%, coronary artery disease 23% (prior PCI 7%, prior CABG 2%), peripheral arterial disease 7% and cerebrovascular accident 24%. Electrocardiographic atrial fibrillation was present in 32%. Echocardiographic abnormalities included left ventricular (LV) dilation (1%), concentric remodeling (47%), LV hypertrophy (46%) including 18% with severe LV hypertrophy, regional wall motion abnormality (21%), decreased LV ejection fraction (21%), abnormal (other than age-appropriate) indices of diastolic function (50%), left atrial (LA) dilation (60%), right ventricular dilation (17%), tricuspid regurgitation peak velocity ≥3 m/sec (49%), and pericardial effusion (9%). Mild, moderate and severe aortic stenosis was present in 14%, 12%, and 16%, respectively. Mild or moderate calcific mitral stenosis was noted in 9%. Significant (>mild) regurgitation was noted in mitral (37%), aortic (13%) and tricuspid (40%) valves. **Conclusion:** Structural and functional cardiac abnormalities are commonly noted among centenarians referred for echocardiography. Overall, at least one echocardiographic abnormality was noted in 99% of the centenarians studied.

P2-118

A Comparison of Long-Term Mortality Prediction Using Two Methods of EF Assessment from the National Echo Database Australia (NEDA)

Atefeh Haghi[1], Simon Stewart[2], David Playford[1], David Celermajer[3], Greg Scalia[4], Marcus Ilton[5], Geoffrey Strange[1]. [1]University of Notre Dame, Perth, Australia; [2]University of Adelaide, Adelaide, Australia; [3]University of Sydney, Sydney, Australia; [4]University of Queensland, Queensland, Australia; [5]Royal Darwin Hospital, Darwin, Australia

Background: Echocardiography (echo) is well established in the evaluation of Left Ventricular Ejection Fraction (LVEF). Traditional methods rely on geometric assumptions not valid in all patients, whereas other measures suffer from challenges in image quality that may undermine their anatomic and geometric superiority. We evaluated the prognostic impact of two established methodologies for calculating LVEF: Basal long axis 2D Teicholz method (Teich) and the Apical Biplane Method of Disks (MOD).
Methods: NEDA contains echo measurement data (years 1997 -2017 inclusive) from laboratories (N=10) across Australia (>530,000 echos) with linkage to the National Death Index (NDI). Data from 352,844 individuals (186,820 men, 60.8±18.0 years and 166,024 women, 60.9±19.2 years) had a mean follow up of 5.4 years per person and 63,142 fatal events. We compared Teich (with linked echo and survival data in 145,785 cases) and MOD (102,850 cases) in predicting all-cause mortality at various time points (1-year and 5-year) across the full distribution of LVEF values. This included all cases, and those with the lowest quintile of LVEF (≤55%). **Results:** In age- and sex-adjusted Cox-Proportional Hazard Models, both methods performed well in delineating the risk of all-cause mortality for all cases. The Teich method performed slightly better: Adjusted HR for mortality in the lowest versus highest quintile of LVEF was 1.89 (95% CI 1.80 to 1.98) for MOD vs 2.00 (95% CI 1.93 to 2.07) for Teich (p<0.001 for all outputs). The sensitivity and specificity of age- and sex-adjusted multiple logistic regression models using Teich were superior in predicting all-cause mortality. For example, the sensitivity and specificity of the model using Teich to predict 5-year mortality in 14,175 cases was 72.2% and 78.5%, respectively (adjusted odds ratio for the lowest versus highest quintile of LVEF being 2.63, 95% CI 2.29 to 3.00; p<0.001). This compared to a sensitivity and specificity 66.5% and 75.9%, respectively (equivalent adjusted odds ratio 2.16, 95% CI 1.86 to 2.59; p<0.001) derived from 15,192 cases with MOD. **Conclusion:** LVEF (on an age- and sex-adjusted basis) is a powerful predictor of short-to long-term mortality with a steep gradient of increasing risk in those individuals with a LVEF <55%. However, in like-for-like comparisons, within a large population, Teich appears to be a stronger correlate of mortality both within the entire spectrum of LVEF values and, specifically, among those with impaired EF. For an individual patient, the best method for EF assessment may be dependent on initial image quality.