A pilot study of the relationship between SYNTAX score and myocardial ischemia with exercise induced left ventricle dilatation as assessed by myocardial perfusion imaging

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Background: Although the Synergy between Percutaneous Coronary Intervention with Taxus and Cardiac Surgery (SYNTAX) score is used to characterize coronary anatomy based on 9 anatomic criteria such as lesion location and complexity, the relationship between SYNTAX score and myocardial ischemia has yet to be elucidated. The main aim of our study was to identify the value of exercise induced LV dilatation and to know whether or not it was a sign of balanced ischemia or 3 vessel disease and its relation to the SYNTAX score as regards to lesion complexity.

Methods and results: Our study included 65 patients that were divided into two groups. The first group had 33 patients with no exercise induced left ventricular (LV) dilatation (mean age: 56.27 ± 11.49 years; range: 32–80 years; 26 male patients; 7 female patients). The second group had 32 patients with exercise induced LV dilatation (mean age: 57.22 ± 6.58 years; range: 40–76 years; 28 male patients; 4 female patients). The patients were consecutively included into our study. All patients included into the study underwent one-day stress-rest 99 mTc-sestamibi single photon emission computed tomography myocardial perfusion imaging (SPECT)(MPI) using treadmill exercise test and were then divided into one of two groups, according to whether or not they had exercise induced LV dilatation in their MPI images. Summed stress score (SSS), summed rest score (SRS) and summed difference score (SDS) were calculated using the acquired images. Their values were then used to estimate the percentage of ischemia. All patients underwent Coronary angiography and the SYNTAX score was calculated using the SYNTAX score calculator available at www.syntaxscore.com. The relationship between the SYNTAX score and the percentage of ischemia in both groups was compared. The results showed that the group with LV dilatation had higher SYNTAX scores. And the SYNTAX score correlated positively with the percentage of ischemia. While the group with no exercise induced LV dilatation had no correlation between the SYNTAX score and the percentage of ischemia. There was no statistically significant relation between exercise induced LV dilatation and the number of affected vessels even when moderate lesions were considered. The SRS, SSS and the SDS correlated positively in both groups with the percentage of ischemia. While the SSS and the SDS correlated positively with the SYNTAX score only in the group with exercise induced LV dilatation.

Conclusion: From these results we can concur that exercise induced LV dilatation is a sign of increased severity of coronary artery disease. Also that the percentage of ischemia correlates with the SYNTAX score only when exercise induced LV dilatation is present.

Radial versus femoral access for primary percutaneous interventions in acute myocardial infarction in over 55 years old patients

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Background: The transfemoral approach (TFA) has been until presently the main-stay for arterial access PCI in the setting of acute STEMI, while the transradial approach (TRA) is gaining ground in elective and to a lesser extent in primary procedures. The number of over 55 years old patients undergoing percutaneous coronary intervention has increased over the last few decades. Studies have demonstrated that old age is a significant predictor of failure in procedures performed using the radial route due to tortuosity and that it is associated with a greater need for conversion to an alternate access route. However, old age is a significant risk factor for severe bleeding and vascular complications related to the procedure. Although access through the radial artery is an attractive approach for PCI in elderly patients, due to its potential to reduce vascular complications and therefore to reduce bleeding, the technical challenges typically encountered using the radial approach and the potentially reduced rate of success of the procedure in these patients may discourage interventionists from using it in this scenario.

Aim of the Work: Our study aimed to evaluate safety (expressed as potential reduction of bleeding complications) in the TRA compared to TFA in over 55 years old patients presenting with acute STEMI who are referred for primary PCI, and to assess the efficacy (expressed as door-to-balloon time) of TRA in comparison to TFA.

Patients and Methods: This study was conducted on 40 patients presenting to Nasser Institute with recent onset of acute STEMI undergoing revascularization via primary PCI in the period from December 2016 till December 2017, the patients were divided into 2 equal groups, for the first group primary PCI was performed via TFA while for the second group via TRA.

The value of left atrial deformation analysis as a predictor of severity of coronary artery disease

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Objective: The aim of this study is to evaluate the relation between LA strain and the severity of coronary artery stenosis in patients with CAD.

Study design: A total 30 patients with stable coronary artery disease (SCAD) with coronary artery stenosis (>50%) who was admitted for elective coronary angiography at Ain Shams University hospitals was included in the study. Measurements of conventional echocardiographic parameters as well as peak LA longitudinal strain during ventricular systole (PALS) and peak LA contraction strain during atrial systole (PACS) were obtained. Also the syntax score was calculated for all patients.

Results: Patients were categorized into 3 groups: low Syntax score (score of < 23 (Group I), moderate syntax score 23–33 (Group II) and high syntax score of > 33 (Group III). PALS (Group I: 20.80 ± 4.48, Group II: 22.44 ± 1.42, Group III: 19.53 ± 4.46; p < 0.001) and PACS (Group I: 13.43 ± 4.05, Group II: 10.84 ± 2.47, Group III: 7.19 ± 0.71; p < 0.022) . Correlation analysis indicated inverse correlation between SXscore level and LA strain parameters (PALS and PACS) (r = 0.861; p < 0.001).

Conclusion: Left atrial deformation analysis by 2D Speckle tracking Doppler Echocardiography can predict the severity of coronary artery disease. In addition left a trial diastolic dysfunction occurs despite normal LV diastolic function in patients with CAD and PALS is a sensitive echocardiographic parameter for estimating severity coronary stenosis in patients with SCAD.

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Results: There was a significantly lower DTN (p = 0.038) and DTB (p = 0.049) times in the radial group (50.75 ± 16.80 versus 54.50 ± 19.92 & 58.50 ± 16.55 versus 62.00 ± 20.09, respectively), while DTN and DTB time for the entire group study was 52.63 ± 18.29 minutes and 60.25 ± 18.26 minutes respectively. In our study there was a significantly higher (p = 0.019) total procedural time used in the radial group (33.50 ± 9.04 versus 28.50 ± 14.24), a significantly higher (p = 0.005) fluoroscopy time used in the radial group (18.15 ± 5.24 versus 13.30 ± 5.09), a significant higher amount of dye used in the TRA vs TFA group (180.00 ± 52.31 versus 155.00 ± 45.59).

Conclusion: The current study concluded that TRA is an effective and safe approach for the management of acute STEMI including over 55 years old patients, TRA shows less bleeding, less local vascular complications, less hospital stay and less costs than TFA if performed by experienced operators. Finally, femoral access doesn’t increase morbidity and mortality, and is still needed in less experienced centers.

Prognostic value of asymmetric dimethylarginine in patients with acute coronary syndrome

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Background: Atherosclerosis is the primary cause of acute coronary syndrome, with most cases occurring from the disruption of atherosclerotic plaque in a coronary artery stimulating platelet aggregation and thrombus formation. Asymmetric dimethylarginine (ADMA) is a naturally occurring chemical found in blood plasma. It is a metabolic by-product of continual protein modification processes in the cytoplasm of all human cells. ADMA inhibits the three isofoms of nitric oxide. It can also generate superoxides, and it interfaces with other targets in the cell. High ADMA values inhibit nitric oxide production needed to promote vasodilation.

Aim of the work: Determining the value of the asymmetric dimethylarginine in patients with acute coronary syndrome as a predictor of major adverse cardiac events (MACE) &mortality during hospitalization & up to 6 months. Patients & methods: This study included 90 patients who were admitted to the cardiac care unit in Ain shams university hospitals with acute coronary syndrome. The patients received optimum medical therapy, in addition, they underwent coronary angiography with either primary or facilitated percutaneous coronary intervention (PCI). Full labs with ADMA marker were obtained within 24 hours of admission, then follow up during hospitalization & up to 6 months after discharge was done regarding the occurrence of major adverse cardiac events (MACE) &mortality. The patients were divided into three groups (A, B&C) according to their admission value of ADMA.

Results: The study population consisted of seventy seven patients (eleven patients were lost during follow up) with an age ranged from 29 yrs to 85 years. The mean age in years was 55.26 ± 9.09. It included sixteen females (20.8%) and sixty one males (79.2%). There was statistical significance between ADMA &LDL, HDL& total cholesterol. Also there is statistical significance between ADMA marker &the prognosis & between the patients groups & the prognosis. The cut off point of ADMA marker is > 1.2

Conclusion: Asymmetric dimethyl arginine (ADMA) marker has a prognostic value in patients with acute coronary syndrome, in which patients with higher levels of ADMA are associated with higher incidence of MACE & higher mortality than patients with low levels of ADMA.

Potential impact of the new AHA/ACC hypertension guidelines on Egyptian population

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Objective: The substantial changes in the cutoffs for defining hypertension made by 2017 ACC/AHA hypertension guidelines provoked extensive debates in numerous medical societies. The current study analyses the potential impact of the 2017 ACC/AHA guidelines in diagnosing hypertension and initiating antihypertensive treatment on a large sample of the Egyptian population. We also compared different guidelines for the optimum number of blood pressure readings (comprising the average of 2-3 readings), to the approach of using the mean of 5 automated blood pressure readings, regarding their implications for diagnosing hypertension.

Methods: 1389 cardiac patients aged (median (25th, 75th percentile) 54 (18, 87 y) presenting at Alhyatt Heart and Vascular center, Alexandria, Egypt were studied. Five consecutive blood pressure measurements were taken, with one-minute intervals. High SBP and DBP were classified according to the mean of the 5 readings as SBP >140 and DBP >90 mmHg according to all guidelines, and >130, >80 mmHg according to the new AHA/ACC guidelines.

Results: Prevalence of hypertension in the study population increased from 40.3 % and 35.7% according to ESC, Mean of 5 readings respectively, to 62% when using the 2017 AHA/ACC cutoffs. Classification of hypertension was altered as follows: (a) percentage of patients classified as high normal changed from 21.7%, 20.6 % according to ESC, Mean of 5 readings respectively to 17.4% as per to the new AHA/ACC. (b) patients diagnosed with stage 1 hypertension percentages changed from 29.6%, 25.6% according to ESC, Mean of 5 readings respectively to 25.6% based on new AHA/ACC. (c) Stage 2 hypertensive patients percentage changed from 8.6%, 8.3% according to ESC, Mean of 5 readings respectively to 40.3% according to the new AHA/ACC guidelines. Whereas percentage of patients recommended to receive antihypertensive medications increased from 40.3%, 35.7% according to ESC, Mean of 5 readings respectively to 49.7% according to the new AHA/ACC protocol.

Conclusion: In light of the recent updates made in November 2017 by the AHA and ACC, it was necessary to review and compare the latest updates with currently utilized guidelines in our daily practice. It resulted in a substantial increase in the proportion Egyptians defined as hypertensives, which in turn made the treatment strategy more aggressive and challenging.