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CARDIOVASCULAR RESEARCH PROVE Journal

"CVREP" Journal

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"*CVREP" Journal* is the official Journal of **CardioAlex Research, Education & Prevention foundation**. It is a peer-reviewed journal, engaged in publishing high quality material on all aspects of Cardiovascular Medicine. It includes updates on cardiology, information to junior doctors, review articles, abstracts, articles related to research findings and technical evaluations. It also provides a forum for the exchange of information in all fields of cardiology.

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SECTION (1): ABSTRACTS PRESENTED @ CARDIOALEX.19

Association of Myocardial Scar Burden Identified by MRI and Left Ventricle Ejection Fraction (LVEF) in Patients with Ischemic Heart Disease (IHD), A Retrospective Cohort Study

Magdi A. Al-dheari, Sarah I. Al-laaboun, Samiha F. Khayyat, Mazen M. Alkhuzai, Aseel A. Aljunaid, Mariam A. Andijani and Fatma A. Aboul-Enein.

BACKGROUND

Cardiovascular megnetic resonance imaging-late gadolinium enhancement **(**CMR-LGE) has the ability to identify myocardial scar. we aim to explore the association between scar burden (extent and severity) And follow-up LVEF.

MATERIALS AND METHODS

We studied 159 patients (88.1% men) with IHD who underwent LGE-CMR for LV viability assessment at KAMC-Makkah from 2012 to present. Scar (defined as myocardium with a signal intensity 50% of the maximum in scar tissue). LGE assess semiquantitvely A five-point scale system that will be used to describe the transmural extent of LGE in each segment (scar score): 0=no LGE, 1=1%–25%LEG, 2=26%– 50%LGE, 3=51%–75%, and 4=76%–100%. Baseline EF (<6 month before CMR) and follow-up EF (>1month after CMR) was determined by Echocardiography.

RESULTS

The mean age was 57.24±9.99 years and the mean baseline LVEF was 28.3±10.5.

Mean scar percentage and transmurality score were higher in patients with severely and moderately depressed baseline LVEF compared to mild to normal LVEF. (38.37±20.7 and 39.15±16.84 vs. 18.46±19.53, p<0.001, and 8.28±4.91 and 8.65±4.26 vs. 4.16±15.12, p=0.003), respectively. On linear regression, baseline EF and scar score% significantly predicted follow-up EF, (b=0.535, p <0.001 and b=-0.102, p=0.024), respectively. baseline EF and Left Anterior Descending artery (LAD) territory viability significantly predicted ΔEF in patient with severely depressed LVEF, (b=-0.452 , p=0.007 and b=7.050 , p=0.002), respectively.

CONCLUSION:

Scar burden is an independent factor and is negatively associated with follow-up EF. In patient with IHD and severely reduced EF, a LAD territory viability is a predictor of the change in EF.

Delta of Egypt Atrial fibrillation registry (DEAF registry)

Ehab Abd-El Wahab Hamdy, Mona Adel El-seady, Amany Mohamed Allaithy, Ahmed Ragab Darwish

OBJECTIVES

The Aim of the registry is to determine patient characteristics, practice patterns, and outcomes of AF in this region using registry's design, and finding if there is a gap between the results in the registry and the recent AF guidelines.

MATERIALS AND METHODS

500 patients with AF (whatever its type) were studied in the period of one year, during emergency room admission. The registry recruited patients from 8 hospitals in 8 cardiac centers in the region of the delta of Egypt (Tanta, Shebin- Elkom, Damanhour, Banha, Mansoura, Zagazig, Kafr-Elsheikh and Cairo). Hospitals were chosen from different geographical locations and selected to represent different settings of care (academic and non-academic, general and specialized, public and private) in the delta. DEAF registry team developed the registry protocol and case report form (CRF) and appointed a coordinator for each participating cardiac center. Screening of AF cases in the ER was carried out by contacting ER doctors and the cardiologists in each cardiac center, any patient ≥18 years of age and had AF documented on a 12-lead ECG or rhythm strip, lasting >30 seconds. All the data about the AF cases were collected by the coordinator in the participating cardiac center.

RESULTS

28.4% of our enrolled patients had heart failure, 51.4% patients were hypertensive and 31% patients were known to be diabetic. We found that 19% patients had rheumatic heart disease. And 24% patients had valvular heart disease (mitral or aortic heart disease). 33% patients had history of dyslipidemia, and finally 17% patients showed no obvious cause of AF. 30.4% patients had a history of coronary artery disease based on patients' words, 10.8% patients had prior Acute Coronary Syndrome (ACS) while 17.2% patients had prior Percutaneous Coronary Intervention (PCI) and 2.4% patients had prior Coronary Artery Bypass Graft (CABG). 47% of the patients had past medical history of atrial fibrillation, of them 45% complained of palpitation, 19% dyspnea and the same chest pain.

CONCLUSION:

Our registry show that hypertension, coronary disease, and heart failure remain common comorbidities in our AF registry where hypertension account alone for about half the patients of atrial fibrillation. Rheumatic valvular heart disease, used to be an important underlying disease for the development of AF. Amiodarone is the commonest AAD used, while regarding rate control drugs, beta-blockers and digoxin were more often used than non-dihydropyridine calcium-channel blockers. Lone AF still high 17% and that reflects that shortage in diagnostic tools in discovering some co-morbidities such as the obstructive sleep apnea.

KEYWORDS

Delta, registry, Egypt, atrial fibrillation, DEAF.

Demographics, Clinical Characteristics, and Outcomes of Hospitalized Heart Failure Patients Across Different Regions of Egypt

Ahmed Hassanin, Mahmoud Hassanein, Madiha Abdel Maksoud

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OBJECTIVE

The aim of this study was to compare the demographics, clinical characteristics, and outcomes of hospitalized heart failure (HF) patients coming from four distinct geographical areas of Egypt: Alexandria, greater Cairo, Delta governorates and Upper Egypt (UE).

MATERIALS AND METHODS

Study participants were part of the European Society of Cardiology (ESC) HF Long term Registry which enrolled patients from ESC member countries between April 2011 to February 2014. In total, 1,660 hospitalized Egyptian patients were enrolled, 15 were excluded due to incomplete data, leaving 1,645 patients eligible for analysis: 914 from Alexandria (5 centers), 249 from Cairo (5 centers), 409 from the Delta region (6 centers), and 73 from UE (2 centers; Assuit and Beni Suif).

The median age of HF patients varied significantly between the four regions, with the highest in Alexandria, 62.8 years, and the lowest in Upper Egypt, 52.2 years (P<0.01). Females represented one-third of the cohort, and that did not vary across the four regions (P=0.5). Cardiovascular risk factors also varied across regions. Diabetes prevalence was > 45% in Alexandria and Cairo and ≤ 35% in the Delta and UE (P<0.01). Hypertension prevalence was highest in Alexandria, 51.8%, and lowest in UE, 17.8% (P<0.01). Smoking was very prevalent, > 50% in all regions, but uncommon among females in the cohort, less than 9% prevelance.

The most common etiology of HF in the four regions was ischemic heart disease, however the prevalence varied significantly between regions, ranging from 72.5% in Alexandria to 40.9% in UE (P<0.01). The second most common etiology was dilated cardiomyopathy (DCM) in Alexandria and Delta. In Cairo, DCM and valvular heart disease came in second position, whereas in UE it was valvular heart disease. For patients with prior history of HF (62% of the total cohort), community acquired infections was thought to be the most common reason for a HF exacerbation in all four regions, contributing to 34.3% of admissions of the entire cohort. Atrial fibrillation was the second most common reason for a HF exacerbation in Cairo, Delta and UE, where uncontrolled hypertension was the second most common reason in Alexandria. Echocardiographic findings showed similar left ventricular ejection fraction across the 4 regions, ranging from 34.5 to 37.5 (P = 0.6). The most common valvular abnormalities in all regions was mitral regurgitation. UE had the highest proportion of patients with valvular abnormalities.

In hospital mortality was 2.9%, 5.2%, 6.1% and 7.7% for Delta, Alexandria, UE and Cairo (P=0.06). Due to the high proportion of patients lost to follow in Cairo and UE, only Alexandria and the Delta provided meaningful one- year follow up data. At one-year 32% of patients from Alexandria compared to 22.6% from Delta were re-hospitalized for HF (P <0.01). Mortality at one-year was also significantly higher in Alexandria compared to Delta, 31.8% vs 13.2% respectively (P<0.01).

CONCLUSION:

Hospitalized HF patients from different geographic areas in Egypt varied significantly in their demographics, clinical characteristics, and outcomes. Those differences underscore the importance of region- specific HF prevention and management strategies.

Effect of Body Mass Index on Management and Outcomes in Patients with Acute Myocardial Infarction

Ghada Shalaby Ali

BACKGROUND

Obesity is a known risk factor for coronary artery disease. However, it is also suggested that obese patients may have better outcomes after a coronary event, sometime termed as "obesity-paradox". Our study aimed to assess impact of BMI on clinical presentation and outcomes after acute myocardial infarction (AMI).

MATERIALS AND METHODS

This is a retrospective, single centre study conducted at KAMC, Makkah during 2016-2018. All AMI patients during this study period were divided into two groups obese (BMI≥30) and non-obese (BMI<30). The two groups were compared using t-test and chi-squared test for continuous and categorical data respectively.

RESULTS

This study cohort included 1191 AMI patients with mean BMI of 28±12. A sizeable proportion (n=328, 28%) were obese with BMI>30. Obese patients tended to present with AMI at a younger age (55±12 vs. 58±12 years, p=0.001).

PCI with radial approach was performed in large majority of patients but tended to be more common in obese patients (84% vs 80%, p=0.07). Contrast volume (145±74 vs. 126±87 ml, p=0.001) and flouro-time (12.9±12.7 vs. 10.7±12.5 min, p=0.008) were significantly higher in obese patients.

There was no significant difference (p>0.05 for all) in complications of AMI including pulmonary oedema, cardiogenic shock and cardiac arrest in the two groups. Post-MI ejection fraction was also similar in both groups (42%). There was numerical but statistically non-significant lower in-hospital mortality in obese patients in unadjusted analysis (2.4% vs 3.9%, p=0.3). Further detailed analysis including analyses after adjustment of confounding variables will be presented at SHA.

CONCLUSIONS:

Obese patients had AMI at a younger age. Procedure time and contrast volume for PCI were more for obese patients. However, in-hospital mortality and complications were not different statistically on unadjusted analyses. We will also include adjusted analyses for confounding variables for presentation at SHA.

Evaluation of Endothelial Dysfunction and Aortic Stiffness in End-Stage Renal Disease Patients on Maintenance Hemodialysis and Renal Transplant Recipients

El-Hassan Mohamed Ayman Abdel-Moniem, Hesham Abdallah Elghoneimy, Abeer Shawky El Hadidi, Montasser Mohamed Hussein Zeid

BACKGROUND

Cardiovascular complications are the leading cause behind the excess morbidity and mortality observed in end-stage renal disease population. The vascular wall in uremia undergoes two major pathological changes being endothelial dysfunction occurring at the intimal level and vascular remodeling occurring in the media. Renal transplant recipients could actually gain benefit from the reduction of circulating uremic toxins affecting the vascular wall with a possible improvement in both endothelial dysfunction and arterial stiffness and thus cardiovascular events.

OBJECTIVE

We aimed to compare endothelial function and arterial stiffness in patients with end-stage renal disease on maintenance hemodialysis (HD) versus those who underwent renal transplantation.

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MATERIALS AND METHODS

This cross-sectional controlled study included 30 chronic hemodialysis patients, 30 renal transplant recipients and 25 healthy controls. Thirty two of our patients (53%) were known to be hypertensive. Patients with diabetes mellitus were excluded from our study. Endothelial function was assessed by measuring the serum level of Visfatin, a well-known marker for endothelial damage. Arterial stiffness was evaluated by measuring the aortic pulse wave velocity (PWV) as an index of large artery stiffness and augmentation index (AIx) as an index of peripheral stiffness. Aortic PWV and AIx were determined non-invasively using Mobil-O-graph device, a brachial oscillometric ambulatory blood pressure monitor device.

RESULTS

Plasma Visfatin concentrations were significantly higher in hemodialysis patients than in transplant recipients and healthy controls (29.30 ± 23.57 ng/ml vs 23.32 ± 25.58 ng/ml vs 13.87 ± 3.90 ng/ml; p<0.001). Similarly, the aortic PWV showed the highest values among hemodialysis patients when compared to transplant patients and control (8.28 ± 2.12 m/s vs 6.92 ± 1.54 m/s vs 5.67 ± 1.06 m/s; p<0.001).The augmentation index was significantly higher among hemodialysis patients when compared to transplant recipients and healthy controls (27.20 ± 11.20 % vs 20.27 ± 11.59 % vs 18.88 ± 11.47 %; p=0.018). However, transplant patients had no significant difference in the AIx values as compared to control (p3=0.790).By univariate analysis, transplant recipients showed a significant inverse correlation between the post renal transplant duration and both serum Visfatin concentrations and AIx (rs=-0.552, p=0.002; rs=-0.435, p=0.016 respectively.

In a multiple regression model, age, systolic blood pressures and pulse pressures were significantly and positively correlated with the aortic PWV in hemodialysis and transplant patients. However, no association was found between plasma Visfatin concentrations and PWV in both groups.

CONCLUSION

Stable kidney transplant recipients had a better endothelial function and peripheral arterial stiffness when compared to HD patients. The reduction of serum Visfatin concentrations and the better values of the augmentation index especially with longer post-transplant duration support our observation. Central aortic PWV also showed a better value in the transplant recipients group.

Patient’s age and their systolic blood pressures were the two main independent factors affecting the central aortic PWV among them.

Feasibility and Clinical Outcome of 48 Mm Drug Eluting Stent Treatment of Long Coronary Lesions in The Egyptian Population

Mohamed Alaa AbdelAziz , Ahmed Mahmoud El Amrawy, Mohamed Ibrahim Loutfi, Salah Mohamed EL-Tahan

BACKGROUND:

Long Coronary lesions represent a formidable challenge during percutaneous coronary intervention. Implantation of multiple contiguous stents may result in sections of overlapping stents or gaps of unstented segments and is an independent predictor of restenosis and major adverse cardiovascular events.

OBJECTIVE:

To assess the feasibility, immediate and short term clinical outcome of implanting 48 mm drug eluting stents with different diameters in treatment of long lesions in coronary artery disease in the Egyptian population.

METHODS:

The study is a prospective study enrolling 110 consecutive subjects from 2 centers in Alexandria with a single coronary lesion planned to undergo percutaneous coronary intervention and attempted implantation of a 48 mm drug eluting stent. Baseline clinical data, procedural outcomes and clinical follow-up to 6 months were obtained. Major adverse cardiovascular events were considered the combined study end point defined as cardiac death, non-fatal myocardial infarction, unstable angina and the need for target lesion revascularization (TLR).

RESULTS:

Among the 110 subjects enrolled, 85.5% were males, mean age 60.8 ± 8.6 years. Procedural success rate was 98.2%. Lesions were treated with 48 mm DES, all post-dilated at high atmosphere (>20 atmosphere) with non-compliant balloons. Mean stent size was 3.16 ± 0.38. Failure of crossing was encountered in 2 subjects due to severe tortuosity. No intra-hospital events occurred. Six-month clinical outcome was compared between diabetic (DM) (n= 23) and non-DM patients (n= 87). Baseline characteristics were similar in the two groups, and 6-month cumulative major adverse cardiac events were significantly lower in the non-DM than in DM group (3.4% in non-DM vs. 17% in DM, p=
0.015). Clinically driven TLR was 2.7% and no cardiac death was reported. The independent predictors of repeat revascularization were insulin treated type 2 diabetes mellitus, reference vessel diameter (RVD) ≤ 2.75 mm and the use of old generation DES.

CONCLUSION:

The use of 48 mm drug eluting stents is feasible, safe and cost effective in treatment of long coronary lesions. Independent predictors of repeat revascularization is type 2 diabetes mellitus, reference vessel diameter ≤ 2.75 mm and the use of old generation of DES.

Feasibility and Safety of Reversed Wire Technique in Coronary Chronic Total Occlusion Interventions

Ayman Elsayed Tantawy

OBJECTIVE

The aim of the study was to examine feasibility and safety of reverse wire technique (RWT) in facilitating CTO PCI success.

MATERIALS AND METHODS

Among 857 CTO PCI cases done between January 2013 until December 2016, RWT was used in 104 patients. Out of them, 70 patients with complete imaging of the process were included and analyzed. The process involved advancing the reversed wire system into a side branch. After adjusting the position of the system, the reversed guidewire was then steered back to pass into the target vessel. In this study, using quantitative coronary angiography (QCA), we examined whether; vessel reference diameter, CTO length as well as the angle between the main vessel and a side branch had an impact on RWT procedure success.

Target CTO lesions were LAD in 31 patients (44%), LCX in 12 patients (17%) and RCA in 27 patients (39%). RWT success was achieved in 47 patients (67%). The main reasons of failure were inability to catch the CTO vessel with the reversed wire (8 patients, 11%) as well as failure to straighten the reversed wire after catching the target vessel (12 patients, 17%). With additional antegrade and/or retrograde techniques, PCI procedure success was achieved in 66 out of 70 patients (94%) with only one side branch occlusion related to RWT process. None of the studied QCA variables was predictive of procedure success.

CONCLUSION

Reversed wire technique was considered feasible, safe and could be an option to facilitate wire crossing of target coronary chronic total occlusion.

Heavy Coronary Calcification in The Egyptian Patients: Prevalence, Patient Characteristics and Clinical Outcomes

Mina Magdy Anis

BACKGROUND

Coronary artery calcification (CAC) is a well-established surrogate marker of the total burden of coronary atherosclerosis. The CAC score (CACS), as measured on coronary computed tomography (CT), is associated with the prevalence of coronary artery disease as well as cardiovascular morbidity and mortality.

OBJECTIVE

To determine the prevalence of heavy calcification in the Egyptian patients by MSCT (multi- slice CT), their clinical characteristics and the relation to their clinical outcomes.

MATERIALS AND METHODS

A retrospective and prospective study of 500 participants that were referred to ICC scan center for coronary MSCT. CACS was measured by 64-128-MSCT and patients were classified in to two groups, heavy (CACS>400) and non-heavy (CACS≤400) calcification groups. Both were screened for traditional risk factors and were followed up for a period ranged from 12 to 24 months for the occurrence of MACE (major adverse cardiovascular events) which in this study was identified as cardiac death, nonfatal MI, unstable angina, revascularization and nonfatal stroke.

RESULTS

The incidence of patients with heavy calcification was 120 patients (24% of the study population). In the heavy calcification group 70.8% were males in comparison to 52.1% in the non-heavy group. The median age in the heavy group was significantly higher (65 years in comparison to 56.5 years in the non- heavy group). The incidence of diabetes and hypertension was significantly higher in the heavy group than the non-heavy one (54% and 75.8% in the heavy group versus 33.3% and 65.8% in the non-heavy one). There was a statistically significant positive difference in cardiac deaths, unstable angina and revascularization between the heavy and non-heavy groups (3.3% versus 0% for cardiac deaths (P=0.003), 5% versus 0.5% for unstable angina (P=0.003), 29.2% versus 14.2% for PCI (P<0.001) and 5% versus 1.1% for CABG (P=0.015)).

CONCLUSION

Egyptian patients with heavy calcification were shown to be older in age and have higher incidence of diabetes and hypertension than those with non-heavy calcification. They also showed a higher risk for incident cardiac death, unstable angina and revascularization. CACS may lead to improvement in risk stratification in asymptomatic Egyptian patients in the intermediate risk category.

KEYWORDS

Cardiac Rehabilitation, Left Ventricular Systolic Function, Ejection Fraction, Left Ventricular Diastolic Function, Doppler Imaging, Speckle Tracking Echocardiography, Global Longitudinal Strain.

Impact of Left Anterior Descending Artery Wrapping Around the Left Ventricular Apex on Cardiac Mechanics in Patients with Normal Coronary Angiography

Hala Mahfouz Badran, Ghada Soltan,Walid Abdou, Tamer Alakshar.

BACKGROUND

The anatomic features of left anterior descending (LAD) coronary artery have important clinical significance. An LAD that wraps around the LV apex theoretically supplies a greater amount of myocardium than one that ends at or before the apex.

OBJECTIVE

We examined the impact of LAD wrapping on left ventricular longitudinal and circumferential and twist mechanics in patients with normal coronary angiography.

MATERIALS AND METHODS

71 patients with evidence of normal coronary angiography (Wrapped LAD: n=52,73%) and non wrapped LAD(n=19, 27%) were included in the study. We compared LV longitudinal and circumferential(CS) strain(εsys), systolic strain rate(SRsys) early and late diastolic SR (SRe& SRa), LV electromechanical dyssynchrony (TTP-SD) in addition to LV twist and torsion using speckle tracking echocardiography between groups.

RESULTS

No significant difference in age, gender or BSA or EF% between the two groups. LAD wrapped group showed higher LVMI, deceleration time (DT), (P<.0001) global longitudinal SRa (P<.02), CS SRa at the basal segments (P<.02), CS SRsys & SRe and SRa (P<.0001) at the apical segments and apical rotation of septal & anterior segments compared with non wrapped group. LV twist was correlated negatively with LV TTP-SD (r=.25, P<.03), and positively with long. εsys (r=.47, P<.0001), CS εsys (r=.55, P<.0001), CS SRsys (r=.23, P<.05), CS SRe (r=.55,
P<.0001). Using multivariate regression analysis LVMI: OR .922 CI: .860-.990, P<.03, DT; OR: .932, CI: .877-.991, P<.02 and CS SRa at atrial diastole; OR: .000,
CI: .000-.271, P<.03, were independent predictors of LAD wrapping around LV apex.

CONCLUSION

Wrapped LAD is associated with better myocardial relaxation and rotational mechanics in patients with normal coronary angiography. This could explain the worse prognosis in such population when LAD occlusion acutely emerges.

Left Ventricular Dyssynchrony Associated with Myocardial Stunning in Acute ST Elevation Myocardial Infarction: Gated Single Photon Emission Computed Tomography Study

Walid Mohamed Ahmed Ahmed

OBJECTIVE

Explore relationship between stunned myocardium, LV dilatation and LV dyssynchrony in post-STEMI settings and role of revascularization

METHODS AND RESULTS

Acute STEMI patients, eligible for primary PCI. Gated SPECT examination, shortly following successful primary PCI and 5-7 days later, to document temporal changes in left ventricular (LV) functional parameters and dyssynchrony indices. Sixty patients were recruited. Paired comparison showed significant improvement in LV functional and dyssynchrony parameters, following primary PCI; LVED 131.7 ± 87.6 to 113.4 ± 61.8, P (<0.001); LVES 88.8 ± 80.5 to 72.8 ± 57.9, P (0.001); histogram BW 79.2 ±54.4 to 67.4 ± 48.2, P (0.012); histogram SD 21.6 ± 15.2 to 17.7 ± 13.2, P(0.004). Multivariate regression analysis showed that that LV dyssynchrony was closely related to LV stunning (OR -0.40 CI 95% (-0.741) – (-0.145), P 0.004, adjusted R2 0.492) and LV dilatation (OR 0.44 CI 95% 0.975 – 3.663, P 0.001, adjusted R2 0.517). An improvement of LV dyssynchrony was closely related to the recovery of dilated LV state; (Adjusted R2 0.57; OR 0.583; CI 95% 0.252-0.534; P<0.001).

CONCLUSION

Successful primary PCI promoted partial recovery of LV function and dilated dimensions, along the short-term in-hospital stay, which was accompanied with substantial improvement in LV dyssynchrony parameters. Left ventricular dyssynchrony is closely associated with dilated and stunned LV conditions.

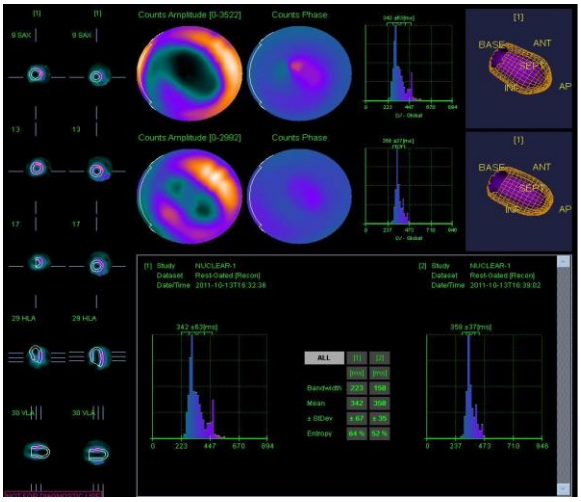


Figure1. Left ventricular Gated SPECT phase analysis of patient, presenting with anterior STEMI. His phase analysis show marked decrease in count amplitudes afecting mainly apex, the anterior wall and septum. First
set of images showed histogram BW: 223.0 ms (84.8^0) and histogram SD:
67.0 ms (25.5^0). Second set of images showed histogram BW: 158.0 ms (60.1^0) and histogram SD: 35.0 ms (13.3^0). R-R 946 ms (360^0). Anterior
STEMI data showed increased dispersion of dyssysnchrony parameters, denoting dyssynchronous LV contractions. This improved partially in the coming days, following primary PCI.

Left Ventricular Systolic and Diastolic Functions After Cardiac Rehabilitation in Successfully Revascularized Patients With Acute Myocardial Infarction

Mohamed Ismail Abdel Rahman Sayed Rashed

BACKGROUND

Coronary artery disease (CAD) is a widely prevalent disease with many adverse sequelae. As survival after myocardial infarction or coronary revascularization has improved, cardiac rehabilitation and secondary prevention services have become more important. Advances in ultrasound such as Doppler imaging, strain or strain rate imaging provide comprehensive information on left ventricle (LV) myocardial contractility.

OBJECTIVE

to evaluate the possible early effect of intensive supervised Cardiac rehabilitation on the LV systolic and diastolic functions in patients with acute myocardial infarction (AMI) who had been successfully revascularized by primary percutaneous coronary intervention (PCI) using two dimensional (2D) speckle tracking and Doppler imaging.

MATERIALS AND METHODS

thirty patients with AMI and successfully revascularized by primary PCI were enrolled in the study. LV global longitudinal strain (LVGLS) analysis was performed using 2D speckle tracking echocardiography before and after Cardiac rehabilitation. LV ejection fraction (EF) was measured using the modified Simpson's method. Pulsed-wave Doppler at the tip of mitral valve leaflets was also done allowing us to measure the early (E) and late (A) diastolic filling velocities, E/A ratio. The LV tissue velocity was measured by TDI of the lateral mitral annulus (e') and E/e' was calculated and LV diastolic dysfunction (DD) grade was estimated.

RESULTS

There was significant improvement in LVEF measurements before and after Cardiac rehabilitation (47.50 ± 6.42 before vs. 52.17 ± 6.64 after; p=0.000).The improvement in 2D speckle tracking LVGLS after Cardiac rehabilitation was statistically significant (p=0.000). the diastolic function as assessed by TDI after a 3- month program of exercise-based cardiac rehabilitation has improved with decrease in the number of patients with DD grade I and increase in the number of normal diastolic function with p-value $P < 0.01$(highly significant).

CONCLUSION

cardiac rehabilitation has beneficial effects on LVGLS, LVEF as well as diastolic function after AMI and successful revascularization.

Left Ventricular Thrombus in Myocardial Infarction Patients Treated with Successful Primary Percutaneous Coronary Intervention: Prevalence And Predictors

Sheeren mohammed Khaled

OBJECTIVE

To determine the prevalence and predictors of LVT formation early in post acute ST elevation myocardial infarction (STEMI) treated with primary percutaneous coronary intervention (PPCI)

MATERIALS AND METHODS

This is a single centre retrospective study, including 308 consecutive patients, 81 (26%) among them were pilgrims. All patients presented with acute STEMI and were treated with successful PPCI. Early screening of LVT by standard echocardiography and CMR during hospital course revealed 36 (11.6%) patients with LV thrombus (LVT (+) group) and 272 (88.3%) patients without (LVT (-) group). The three powerful independent variables associated with LVT formation were LAD-related infarct (HR=10.17; p<0.0001), severe LV systolic dysfunction (HR= 8.3; P=0.0001) and culprit lesion-only PCI (HR= 7.04; P=0.015). Pilgrim patients who had the highest heat stress and physical effort related to pilgrimage, were more vulnerable for dehydration but were not distinctively at higher risk of LVT as compared to non- pilgrims.

CONCLUSION

Early LVT formation persists a frequent complication in acute STEMI although culprit lesion is timely and successfully reperfused. It is predictable in patients suffering acute infarct in LAD territory with involvement of the apex, severe LV systolic dysfunction and culprit lesion PCI. Screening of LVT should be early and comprehensive in at-risk patients.

Left Ventricular Untwist During Isovolumic Relaxation Time in Patients with Diastolic Dysfunction

Mohamad Alfarnawany, Said Shalaby, Mahmoud Kamel

BACKGROUND

The traditional echocardiographic parameters can evaluate the left ventricular (LV) diastolic function later to mitral valve opening (MVO), while the LV untwisting predominantly occurs during the isovolumic relaxation interval (IVRT) before MVO, so its assessment reflects the LV relaxation. The aim of this study was to employ speckle-tracking imaging (STI) to examine the LV untwisting during IVRT in patients with diastolic dysfunction.

METHODS AND RESULTS

In this study 70 patients with diastolic dysfunction and 25 healthy volunteers were recruited, all individuals were subjected to conventional echocardiography and STI. Using STI, The percentage changes between peak twisting and untwisting at MVO (%UT) was defined as (%dpTw
- UtwMVO), the untwisting rate during IVRT (UT rate) was defined as the (%dpTw - UtwMVO)/IVRT, where UtwMVO is untwisting at MVO and Tw is the peak LV twist at end-systole. The %UT was significantly reduced among patients compared to controls (0.27± 0.08 vs 0.47 ± 0.06 at P ≤0.001) as such as the UT rate (0.37 ± 0.11 vs 0.67 ± 0.10 at p ≤0.001). Both of the %UT and the UT rate were inversely correlating with and LV wall thickness, peak twist, age, and the presence of DM and/or hypertension. The UT rate was positively correlating with Doppler tissue imaging (DTI) derived mitral annular velocity (e') and IVRT.CONCLUSION

Based on STI, LV untwist during IVRT is impaired in patients with diastolic dysfunction. The UT rate and %UT may be beneficial noninvasive parameters for detection of LV diastolic dysfunction.

KEYWORDS

Untwisting, Diastolic dysfunction, Speckle tracking.

Non-Invasive Myocardial Wokload Analysis in Patients with Bundle Branch Block (BBB) And Mechanical Dyssychrony

Ahmed Salem Beela

BACKGROUND

In patients with bundle branch block (BBB), the intra-left ventricular conduction delay results in inhomogeneous activation of different myocardial segments, in particular in septal and lateral walls where the septum is activated first followed by the lateral wall, resulting in different workloads in those segments. Recent data showed that Apical rocking- as a surrogate of mechanical dyssynchrony- might be better representative of true left bundle branch block (LBBB) as compared to ECG.

OBJECTIVE

Quantification of workload of different myocardial segments, non-invasively, using pressure-strain loops in patients with wide QRS complex and ventricular conduction delay and/or mechanical dyssynchrony.

MATERIALS AND METHODS

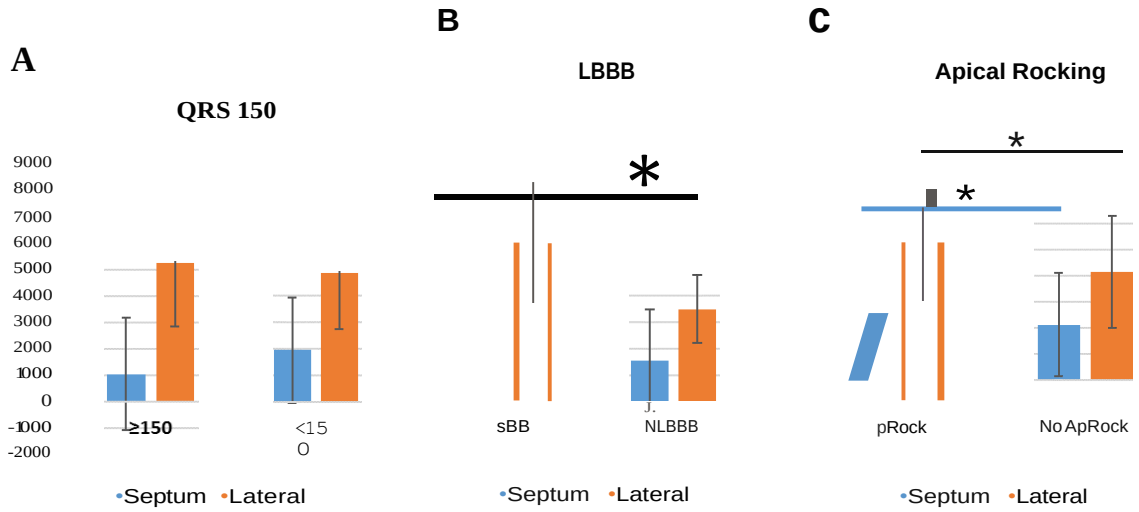
The ECGs of 55 patients with a QRS duration of at least 120 ms were stratified based on the QRS duration and pattern of BBB. Of them 40 patients (73%) had a QRS ≥150 ms and 36 patients (65%) had a QRS pattern of LBBB. Additionally, Apical rocking (ApRock) was identified visually using 2D echocardiograpy in 30 patients (55%) and was defined as an early septal contraction during the isovolumetric contraction phase followed by a late lateral wall contraction during the LV ejection phase. Segmental myocardial work was non-invasively quantified using pressure-strain loops, by combining myocardial strain curves using 2D speckle tracking of the 3 apical views with non-invasive blood pressure readings. Septal work refers to the average of the 6 septal segment (mid, basal and apical anteroseptal [3CH] and inferospetal [4CH]), while the lateral work refers to the average wok of the 6 lateral segments (mid, basal and apical anterolateral [4CH] and inferolateral [3CH]).

RESULTS

Neither septal nor lateral work differed significantly among patients with a QRS duration of longer or shorter than 150 ms (P=0.2 and 0.6 for septal and lateral work respectively, Figure A). On the other hand, the lateral wall performed significantly more work in patients with LBBB (P<0.01) than in patients with NLBBB, while septal work did not differ significantly between both groups (P=0.5, Figure B). Alternatively, in patients with ApRock the work of the lateral wall was significantly higher than in patients with no ApRock, while septal work was significantly lower (P<0.01 for both comparisons, Figure C).

CONCLUSION

In patients with LBBB, the inhomogeneous activation of myocardial segments for the septal and lateral walls results in different myocardial workload in the corresponding segments, where the earlier activation of the septum results in less work and the later activation of the lateral wall results in more work. ApRock as a surrogate of mechanical dyssynchrony can reflect true LBBB pattern of myocardial activation and workload distribution and hence, can be used for candidate selection for cardiac resynchronization therapy (CRT).



bars reflects standard error,* refers to P<0.05,LBBB: left bundle branch block

Phrenic Nerve Damage After Atrial Fibrillation Ablation Using Second Generation Cryoballoon

Kudret Aytemir

OBJECTIVE

Cryoballoon (CB) ablation is a safe alternative to radiofrequency ablation in the treatment of atrial fibrillation (AF). However, phrenic nerve damage (PND) is a bothersome complication of the procedure. In this study, we aimed to establish the incidence of PND during CB and define the characteristics of affected patients.

METHODS AND RESULTS

In this retrospective analysis, all patients with AF that underwent CB ablation between 2013 and 2018 were included into the study. Characteristics and outcomes of patients complicated with PND were evaluated. PNP was detected by palpation of diaphragma contractions or observation of reduced diaphragma motility by fluoroscopy during the procedure. Totally 653 patients were included in the study. PND was detected in 3.5% (23/653) of the patients. Median age of the patients with PNP was 56 (25-78) years and 10 patients (43.4%) were male. The most common ablation site related with PND was RSPV (18 patients, 78%). Transient PND was observed in 16 patients (69%) of the patients which resolved within 24 hours after the procedure. In the remaining 5 patients (21%) diaphragmatic contraction was recovered at the 6th month control visit. In 2 patients (10%), phrenic nerve paralysis was still present >1 year visit.

CONCLUSION

PND is not a rare complication of CB ablation despite all the preventive maneuvers during the procedure and technological developments. However, most of the PND recovered during the follow-up.

Predictive Value of Tissue Doppler Imaging For Left Ventricular Ejection Fraction And Infarct Size Versus Myocardial Perfusion Imaging After Primary Percautaneous Coronary Intervention For Acute Myocardial Infarction

Manar Mostafa Al-zaky, Hanan Radwan Ahmed Shaker

BACKGROUND

The main goal in the management of acute myocardial infarction (MI) is an early restoration of coronary artery flow in order to preserve viable myocardium, primary percautaneous coronary intervention (PCI) has been proven to be superior to other reperfusion strategies in terms of mortality reduction and preservation of left ventricular (LV) function. (**Zilstra F et al., 1999**). Decreased LVEF and LV remodelling are associated with adverse prognosis. Therefore, early identification of high-risk patients is crucial. (**Joost P et al., 2010**).

OBJECTIVE

This study was designed to evaluate the predictive value of TDI for left ventricular ejection fraction measured by conventional Echocardiography in ST-elevation myocardial infarction patients who underwent primary PCI in reference to ejection fraction and infarct size measured by technetium Tc99m sestamibi single photon emission computed tomography.

MATERIALS AND METHODS

All the patients included in the study were subjected to Electrocardio- graphic analysis and cardiac biomarkers sampling and primary percutanous coronary intervention. Echocardiographic studies were performed within 24 hr and 3 month of the acute infarction. Technetium Tc 99m sestamibi were pefrmed 3 months after primary PCI. All patients of the study group were subdivided into 2 subgroups: Group (I): included 39 patients with positive invasive and non invasive reperfusion criteria. Group (II): included 11 patients with negative invasive and non invasive reperfusion criteria.

RESULTS

The studied groups were compared at baseline study and 3 months later, there was significant difference in favor of group (1) regarding all echocardiographic parameters, Tissue Doppler data was statistically significant difference in the (Sm) and (Em) wave values with more improvement at follow-up, while the mean value of Am wave velocity showed significant difference between group (I) (6.856±0.654) in favor of group (II) (8.222±0.481). The mean Sm wave velocity had cutoff value of 4.5cm/sec or more for prediction of recovery of global systolic function with a sensitivity and specificity of 97.4% and 90.9% respectively while the Em wave velocity had a cutoff value of 4.7cm/sec or more for prediction of recovery of diastolic function after myocardial infarction treated with primary PCI with a sensitivity and specificity of 94.9 % and 90.9% respectively. The mean LVEF in patients under study increased from 44.78±7.07% to 50.26±8.02 and in Group (I) patients, the mean LV EF of the group population increased from 46.87±6.38% to 53.36±6.22% (mean 6.49%, P- value 0.001) between the first and the second echocardiography evaluation, while in group (II), the mean LV EF increased but less than 5%. Regarding septal\lateral wall dssynchrony: Our data detected statistical significant difference between early and follow up (3 months) after primary PCI between both groups as regard septal\lateral wall dyssynchrony p-value<0.001. Regarding technetium Tc 99m sestamibi parameters; our study showed a significant positive correlation between EF% measured by Echo and EF% measured by technetium Tc 99m sestamibi (r=0.965, P< 0.001) & significant positive correlation between PTD average systolic and diastolic myocardial velocity (Sm6), (Em6) and EF% measured by technietum tc 99 sestamibi (r= 0.711, p< 0.001) (r = 0.739, p< 0.001) respectively.

CONCLUSION

EF measured by conventional Echo (by Simpson's method) is as sensitive as and specific for evaluation of left ventricular function in the setting of post primary PCI as TDI parameters in reference to the technetium 99m sestamibi single photon emission computed tomography. This study demonstrated a significant relationship between systolic and diastolic PTD parameters and infarct size measured by technetium 99m sestamibi 3

months after primary PCI therefore infarct size be useful as an endpoint in clinical trials and as important prognostic measure when caring for patients with STEMI. Also this study has demonstrated a significant relationship between systolic and diastolic PTD parameters and both invasive and noninvasive markers of reperfusion in patients with acute STEMI undergoing primary PCI.

Pristimerin Protects Against Doxorubicin-Induced Cardiomyopathy and Fibrosis

Hany Mahmoud Abo-Haded

BACKGROUND

Pristimerin (Pris) is triterpenoid compound with many biological effects. Until now, nothing is known about its effect on doxorubicin (DOX)-induced cardiotoxicity. Hence, this study investigated the impact of Pris on DOX-induced cardiotoxic effects.

MATERIALS AND METHODS

Rats were treated with Pris 1 week before and 2 weeks contaminant with repeated DOX injection. Afterwards, electrocardiography (ECG), biochemical, histopathological, PCR, and Western blot assessments were performed.

RESULTS

Pris effectively alleviated DOX-induced deleterious cardiac damage. It inhibited DOX induced ECG abnormities as well as DOX-induced elevation of serum indices of cardiotoxicity. The histopathological cardiac lesions and fibrosis were remarkably improved in Pris-treated animals. Pris reduced hydroxyproline content and attenuated the mRNA and protein expression of the pro-fibrogenic genes. The antioxidant activity of Pris was prominent through the amelioration of oxidative stress parameters and enhancement of antioxidants. Furthermore, Pris enhanced the activation of nuclear factor-erythroid 2 related factor 2 (Nrf2) signaling pathway as it increased the mRNA and protein expression of Nrf2 and Nrf2-dependent antioxidant genes (GCL, NQO1, HO-1). Additionally, the anti-inflammatory effect of Pris was obvious through the inhibition of mitogen activated protein kinase (MAPK)/nuclear factor kappa-B (NF-kB) signaling and subsequent inhibition of inflammatory mediators.

CONCLUSION

This study provides evidence of the cardioprotective activity of Pris which is related to the modulation of Nrf2 and MAPK/NF-kB signaling pathways.

KEYWORDS

doxorubicin, pristimerin, cardiotoxicity, Nrf2, MAPK/NF-kB

Relation Between Blood Pressure Variability and Coronary Artery Remodeling Index in Normotensive Patients with Coronary Artery Disease: An Intravascular Ultrasound Study

Ragab A. Mahfouz, Islam Galal, Mohamed S. Ghareb, Moataz Elsanan

OBJECTIVE

We aimed to investigated the relation of blood pressure variability and coronary artery remodeling in normotensive patients with coronary artery disease coronary by intravascular ultrasound (IVUS).

MATERIALS AND METHODS

BP variability indices including systolic and diastolic 24-h average, the day and the night values of standard deviation (SD) and variation coefficient (VC) were measured and calculated, and the coronary artery remodeling derived from IVUS, in 120 normotenisve patients, presented for coronary angiography. The remodeling index was defined as the ratio of the external elastic membrane (EEM) area at the lesion site to the EEM area at the proximal reference site. Based on the definition of remodeling index (Nakamura, et al)* patients were stratified into 3 groups: group with positive remodeling (RI>1.05), intermediate remodeling (RI:0.95-1.05) and a group with negative remodeling (RI<0.95). Systolic SD and VC values for 24-h average (15.6±2.9mmHg vs. 7.2±1.5mmHg, p<0.001 and 15%±3 vs. 9%±2, p<0.001, respectively). In addition the night systolic SD and VC values (13.5±3.8mmHg vs. 7.3±2.1mmHg, p<0.001 and 16.2%±4.1 vs. 10.4%±2.8, p<0.004, respectively) were significantly higher in patients with positive remodeling compared to patients with negative remodeling. Meanwhile the diastolic parameters were slight higher in patients with positive remodeling, yet non- significant. ROC curve analysis showed that, the cut-off values of 13 mmHg and 15% for 24-h systolic SD and VC, respectively, were found to be the best cut-off values, with a sensitivity of 94% and 95%), whilst the specificity was (87% and 89%, respectively) in predicting positive remodeling in normotensive patients presented with typical chest pain for CAD

CONCLUSION

we suggest that systolic SD and blood pressure variability coefficient are associated with positive coronary artery remodeling index independent of coronary artery disease risk factors in normotensive patients.

KEYWORDS

Blood pressure variability; Remodeling Index; IVUS

Role of Speckle Tracking Echocardiography in Evaluation of Left Ventricular Systolic Function in Patients With Rheumatic Mitral Stenosis

Elmenyawy E., Maged Z, Eid D

BACKGROUND

Items	Diseased group	p-value
	Mean ± SD	
LAD	4.53±0.54	<0.001**
IVSS	1.22±0.19	0.003**
LVEDD	4.61±0.58	0.802
LVESD	2.97±0.42	0.356
LVEF	64.67±4.44	0.055

Items	Diseased group	P-value
	Mean ± SD	
Basal Anterior PLSS	-14.87±5.44	0.001**
Basal Inferolateral PLSS	-15.53±4.6	<0.001**
Basal Inferoseptal PLSS	-12.87±3.6	<0.001**
Basal Anterolateral PLSS	-14.47±6.92	<0.001**
Basal Anteroseptal PLSS	-13.6±4.29	<0.001**

LAD: left atrial diameter, IVSS: interventricular septum systolic diameter, LVEDD: left ventricular end diastolic diameter, LVESD: left ventricular end systolic diameter, LVEF: left ventricular ejection fraction.

Mitral stenosis (MS) is a common valvular disease in developing countries because it is a major consequence of rheumatic endocarditis. In approximately one fourth of patients with pure mitral stenosis there is a decrease in left ventricle systolic performance.

OBJECTIVE

To study the usefulness of speckle tracking echocardiography in the assessment of left ventricular systolic function in patients with rheumatic mitral stenosis.

MATERIALS AND METHODS

Case-control study included 60 persons divided into two groups (30 normal healthy volunteers of control group and another 30 patients of diseased group with pure mitral stenosis) then taking history and examination followed by echo Doppler study using VIVID E9 XD clear for assessment of the LV systolic function by speckle tracking (longitudinal strain).

RESULTS

There is significant difference in left atrial diameter and interventricular septum systolic diameter in two group (increase in diseased group).

Also, comparative analysis between some difference in longitudinal strain for each segment between Control and diseased group:

- In diseased group there is decrease in longitudinal strain of basal segments with normal longitudinal strain of apical segments.
-In asymptomatic patients apical segment shows tendency to be super normal

PLSS: peak longitudinal systolic strain.

CONCLUSION

In pure mitral stenosis there are affection of basal segments while apical segments shows normal or supernormal as compensatory mechanism to keep normal systolic function. So, we aim to set a standard parameter for longitudinal strain as method for follow up and detection of subclinical LV dysfunction in patients with pure mitral stenosis.

The Correlation Between Left Ventricular Global Longitudinal Systolic Strain and Coronary Artery Disease Severity

Ahmed Moustafa, Sherif Ayad, Ali Zidan, Sanaa Ashour

OBJECTIVE

We aimed to evaluate the correlation between left ventricular global longitudinal systolic strain (GLSS) and coronary artery disease severity assessed by SYNTAX score (SS) in patients with suspected CAD.

METHODS AND RESULTS

we examined sixty four consecutive patients undergoing both coronary angiography and transthoracic echocardiography within 15 days. All patients had normal left ventricular ejection fraction and segmental wall motion on resting echocardiogram. GLSS was calculated using 2-D speckle tracking echocardiography. Images were obtained in the apical long-axis, four-chamber, and two-chamber views with a frame rate of a minimum 45 frames per second. GLSS was calculated from the average of the peak systolic longitudinal strain of all 17 segments. SS was calculated for all patients based on presence and/or severity of coronary artery disease (CAD). There was 21 patients with SS ≥ 22 (GLSS mean ± SD = -15.05 ± 2.71), 23 patients with SS<22 (GLSS mean ± SD = -16.09 ± 2.56) and 20 persons (control group) with no CAD on angiogram (GLSS mean ± SD = -19.75 ± 2.10). There was no statistically significant deference regarding Age, sex and most of the risk factors as hypertension, diabetes mellitus, smocking, obesity or family history of CAD between the 3 groups. The mean GLSS was significantly lower in the CAD groups than the control group (P<0.001).

There was statistically significant inverse correlation between GLSS and SS values ($\mathbf{r_s}$ = - 0.621, P <0.001) .Receiver operating characteristic curve analysis identified that the optimal cut-off for the detection of patients with SS ≥ 22 was -15% [AUC 0.736, 95% CI 0.603 – 0.870, p=0.002]. The sensitivity, specificity, positive predictive value, negative predictive value and accuracy of GLLS were 71.43%, 83.72%, 68.18%, 85.71% and 79.69% respectively.

CONCLUSION

The results of our study suggest that there is a significant inverse correlation between GLSS and SS. GLSS might be promising in detecting patient with SS ≥ 22 on coronary angiogram.

The Value of Speckle Tracking Echocardiography in Assessment of Myocardial Viability in Comparison with Thallium-201 Scintigraphy

Alyaa Elsayed Hussein, Amr Kamal Bahgat, Gehan Magdy Youssef, Sahar Hamdy Azab

OBJECTIVE

is to assess the value of Left Ventricular Longitudinal Strain in assessment of myocardial viability using Speckle Tracking Echocardiography in comparison with Rest-Redistribution Thallium – 201 Scintigraphy.

MATERIALS AND METHODS

The study included 25 patients who had a history of myocardial infarction and had regional wall motion abnormality by echocardiography requiring viability study before revascularization. Each of these patients underwent Transthoracic echocardiography measurements with the use of a 17-segment paradigm for the division of the LV, as proposed by the American society of echocardiography (ASE), they also underwent Thalium scintigraphy, as well as Speckle tracking Echocardiography to analyze the deformation by the percent of wall lengthening and shortening representing longitudinal strain for each segment along with a global strain value for the LV.

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RESULTS

Of the 425 segments studied, 307 segments were viable representing 72.2% of the segments while 118 segments were non-viable representing 27.8% of the segments according to Thallium – 201 Scintigraphy. Comparing these viable and non-viable segments regarding longitudinal strain value during baseline STE, low dose dobutamine STE revealed a cut off value at baseline STE to detect viable myocardium of ≥ -10.00 (Sensitivity: 65.0%, Specificity of 70.0%), a cut off value at low dose dobutamine STE of ≥ -13.00 (Sensitivity: 75.0%, Specificity: 70.0%) and a cut off difference value of ≥ -2.00 (Sensitivity: 81.1%, Specificity:80.5%).

CONCLUSION

2D speckle tracking echocardiography can assess myocardial viability with good sensitivity and specificity compared to SPECT. The change in longitudinal strain value is the most sensitive parameter to detect viable myocardium by low dose dobutamine 2D STE

SECTION 2:
RESUMES, ARTICLES AND TOPICS
PRESENTED @ CARDIOALEX.19

Anomalous Origin of Left Main Coronary Artery from Right Sinus of Valsalva with Advanced Atherosclerotic Multivessel Disease

Ahmad Fathy, MD, FACC, National Heart Institute

A 69-year-old man presented with recurrent chest pain CCS 111. He reported no associated shortness of breath, palpitations, or dizziness. He reported previous coronary interventions with 4 stents in 2011, 2013, with long history of hypertension, dyslipidemia and diabetes. An electrocardiogram showed T-inversion lateral chest lead, echo Doppler showed hypokinetic anteroseptal and lateral wall, EF 43 %. . Coronary angiogram showed anomalous origin of left main from right coronary sinus with severe instent stenosis in mid LM, and severe lesion in proximal left CX, patent stent in mid LAD. CTA was done to confirm expected non-malignant LM course. It was retro aortic course. IVUS guided PCI of LM and proximal LCX with two DES was proceeded with good final result.

Comment

The origin of the LMCA from the right sinus of Valsalva is rare (approximate prevalence, 1.0 %). This anomaly vary in clinical presentation with respect to origin location and course of LM (inerarteial course-most malignant, anterior course, septal course and retro aortic course). Some anomalies are merely anatomic variants without clinical relevance; others can present with chest pain, syncope, or sudden cardiac death. Associated atherosclerotic disease in old patients is considered in modification of clinical presentation as well as management strategy.

Applications of 4D Flow MRI in Congenital Heart Disease

Judy Rizk, Eman Elsharkawy, Gihan Magdy, Tarek Elzawawy Department of Cardiology, Faculty of Medicine, Alexandria University, Alexandria, Egypt

The growing population of adult patients with repaired congenital heart disease (CHD) has resulted in an increasing need for accurate imaging to detect long-term complications as well as understand the underlying hemodynamics. Magnetic resonance imaging (MRI) plays an important role in the evaluation of patients with CHD. 4D flow MRI has emerged as a tool that enables comprehensive study of flow.

4D flow MRI involves the acquisition of a three-dimensional time-resolved volume with velocity-encoding in all three spatial directions along the cardiac cycle. This has the advantage of allowing retrospective placement of analysis planes within any location of the acquisition volume. Not only is flow quantification possible but also visualization of blood flow patterns. More importantly, three-dimensional velocity encoding has enabled the analysis of advanced hemodynamic parameters as kinetic energy and wall shear stress (WSS).

The study of altered flow dynamics is important in understanding the underlying mechanisms in various cardiovascular diseases. In CHD, 4D flow MRI has been particulary useful in understanding bicuspid aortic valve (BAV) aortopathy and failing Fontan circulation. 4D flow MRI-based studies involving visualization of altered flow patterns and distribution WSS in the ascending aorta in BAV have provided increasing evidence supporting the role of valve-related hemodynamics in BAV aortopathy. This is related clinically to less aggressive cut-offs for ascending aortic surgery in comparison to other inherited aortic diseases as Marfan syndrome.

In Fontan circulation, flow visualization has demonstrated asymmetrical flow distribution with preferential flow from the superior vena cava to the right pulmonary artery and more balanced inferior vena caval flow distribution. 4D flow MRI has also been shown to be more time efficient in flow analysis and quantification of collateral flow that requires the calculation of flow at a minimum of 5 planes: ascending aorta, right and left pulmonary arteries, superior and inferior vena cava. In addition, 4D flow MRI has enabled the study of Fontan circulation energetics and factors affecting its efficiency. This may contribute to improving the geometry of the surgical anastomosis.

Although the main limitation of 4D flow MRI is the trade-off between acquisition time and spatiotemporal resolution, the use of 4D flow MRI has added insight into the abnormal hemodynamics involved in CHD. 4D flow MRI not only allows flow quantification, but also flow visualization as well the study of advanced hemodynamic variables. Ongoing technical development and more widespread availability of sequences by MRI systems as well data analysis software makes 4D flow MRI a promising tool for comprehensive flow assessment in CHD.

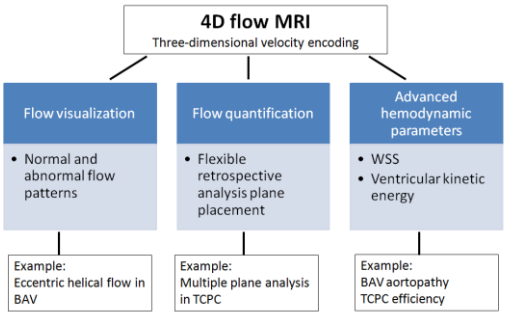


Figure. Applications of 4D flow MRI in CHD. BAV= bicuspid aortic valve, MRI= magnetic resonance imaging, WSS = wall shear stress, TCPC = total cavopulmonary connection.

Clinical Correlation Between Cardiac Sympathetic Imaging & Management of Heart Failure

Khaled El Nimr

Heart failure (HF) is a specific term used to define clinical syndrome that describes the situation when the heart is unable to pump enough blood for the metabolic needs of the body, it became an epidemic with an increasing prevalence and an absolute mortality rate of approximately 50 % within 5 years of diagnosis1. A nuclear cardiology test is the most commonly performed non-invasive cardiac imaging test in patients with heart failure, and it plays a pivotal role in their assessment and management2. Quantitative gated single positron emission computed tomography (QGS) is used to assess quantitatively cardiac volume, left ventricular ejection fraction (LVEF), stroke volume, and cardiac diastolic function. Resting and stress myocardial perfusion imaging, with exercise or pharmacologic stress, plays a fundamental role in distinguishing ischemic from non-ischemic aetiology of heart failure, and in demonstrating myocardial viability3. Diastolic heart failure also termed as heart failure with a preserved LVEF is readily identified by nuclear cardiology techniques and can accurately be estimated by peak filling rate (PFR) and time to PFR. Movement of the left ventricle can also be readily assessed by QGS, with newer techniques such as three-dimensional wall thickening evaluation aiding its assessment. Myocardial perfusion imaging is also commonly used to identify candidates for implantable cardiac defibrillator and cardiac resynchronization therapies. Neurotransmitter imaging using 123I-metaiodobenzylguanidine offers prognostic information in patients with heart failure4. Metabolism and function in the heart are closely related, and energy substrate metabolism is a potential target of medical therapies to improve cardiac function in patients with heart failure. Cardiac metabolic imaging using 123I-15-(p-iodophenyl)3-R, S-methylpentadecacoic acid is a tracer used in clinical studies to diagnose metabolic heart failure5. Nuclear cardiology tests, including neurotransmitter imaging and metabolic imaging, are now easily preformed with new tracers to refine heart failure diagnosis.

Dilemma of Balloon Dilatation of Aortic Stenosis

Hala Agha

Congenital aortic stenosis (AS) is a rare congenital heart disease and has a wide range of clinical presentations. The two main modalities used for congenital aortic stenosis treatment are balloon aortic dilatation (BAD) and surgical aortic valvuloplasty (SAV).

The learning objectives are to highlight on the indications for intervention of AS, to present the debate of balloon valvuloplasty versus surgical valvotomy and to focus on the predictors affecting the outcome of 2 procedures.

The treatment of newborns with critical AS remains a challenge in pediatric interventional cardiology although pediatric cardiac surgeons are reporting good outcomes with direct valvotomy.

Based on the echocardiographic imaging modality that describes valve morphology, measures the annulus, assess the degree of left ventricular outflow obstruction and estimates the left ventricular dysfunction, the prognosis and the plan of therapy were clarified.

Aortic balloon dilatation is indicated in critical AS who is ductal dependent regardless of valve gradient, in children with isolated VAS and depressed LV systolic function, resting peak systolic valve gradient (by catheter) of >50 mm Hg and resting peak systolic valve gradient (by catheter) of >40 mm Hg if there are symptoms of angina or syncope or ischemic ST-T-wave changes on ECG at rest or with exercise.

Reduction of AS below 35 mm Hg may be more important than previously recognized and may be indicated even at the expense of mild or greater AR.

Concerning the risk factors for AS; Immediate: age < 3 months, severity AS predilation and balloon/annulus < 0.9 and on long-term: small aortic annulus diameter

For aortic regurgitation; Immediate: AR pre, large annulus, large balloon/annulus ratioand on long-term: functionnally bicuspid valve, large annulus (cusp disruption), older age at time of intervention.

Aortic valve (AV) insufficiency and residual AS are the primary factors that are reported to necessitate the surgical reintervention.

Take Home points; the use of BAV#SAV for initial treatment is based on institutional preference, the short term has similar results for aortic regurge and mortality, while on the long term there will be higher rate of reintervention for BAV and finally in neonatal critical AS balloon valvuloplasty remains the first theuraptic choice

2month-old, severe AS, severe heart failure, well formed LV with borderline function

Balloon valvuloplasty for severe AS, heart failure, well formed LV with borderline function

Effect of Khat Chewing on Cardiovascular Diseases

Ahmed AL-Motarreb MD, MSc, PhD, FGHA Professor of Cardiology Faculty of medicine, Sanaa University

Fresh Leaves from khat tree are chewed daily for its euphoric properties and as asocial habit. Leaves contain the major pharmacological active constituent; the Cathinone which is a sympathomimetic Amine with properties similar to those of Amphetamine

Cathinone as amphetamines release endogenous catecholamine from peripheral and central neurones

The market value of the khat and its potency depends on the concentration of Cathinone in these leaves which differ from one type to another according to the Geographical area of cultivation. *Khat behavior and traditions have been changes towards the worst.* Khat represent a real medical problem in our society. It is estimated that 90% of male and more than 50% of females are chewing khat daily.

The Main Effect of Khat Chewing on Health are on the Cardiovascular System & Nervous system. Several studies have demonstrated the cardiovascular side effects of chronic khat chewing on the blood vessels and heart muscle.

Hybrid Transcatheter Treatment for Ischemic Cardiomyopathy: Direct Ventricular Therapy beyond Drugs, Devices and VADs

Horst Sivert

Recently a new less invasive therapy for ischemic heart failure patients who develop ventricular dysfunction due to previous Acute Myocardial Infarction (AMI). With the advent in the past 20 years of widely available PCI and increasingly short “door-to-balloon” times, most patients now survive these initial ischemic events. However, as a consequence of the resulting myocardial scarring, an enormous growth in the ischemic heart failure population has occurred. Although PCI has reduced the morbidity associated with AMI, there remains a 30% occurrence rate of adverse remodeling after PCI in which patients had a worse prognosis than those who did not remode. Additionally, infarct size post-PCI is strongly associated with all-cause mortality and hospitalization within 1 year (Figure 1) demonstrating that PCI is not the ultimate solution for AMI patients - the remaining infarct still needs to be addressed.

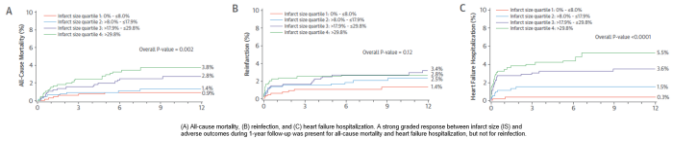


Fig. 1 All-Cause Mortality, Infarction, & Hospitalization

In recent years, minimally invasive therapies which address the valvular and vascular components of structural heart disease have been well received (TAVI, MitraClip, PCI, DES) and incorporated into regular clinical practice. However, until now, no less invasive option was available to address the ventricular component of heart failure. A large therapy gap existed in the spectrum of available minimally invasive HF treatments ranging from medical therapy, to CRT devices, and often ending with highly invasive ventricular assist devices (VADs) or heart transplantation.

In years past, various approaches for Surgical Ventricular Reconstruction (SVR) were regularly employed to improve ischemic heart function by excising the culprit scar, reducing LV volume and attempting to restore normal cardiac morphology and size (Fig. 2). However, this was a highly invasive operation requiring cardiopulmonary bypass, sternotomy and ventriculotomy. The technique, although invasive and with high risk, demonstrated favorable remodeling of the

dysfunctional myocardium and a clear survival benefit in properly selected patients. SVR was tested in a large, prospective, randomized trial named Surgical Treatment for Ischemic Heart Failure (STICH). In this study, CABG alone was compared with a combined CABG plus LV reconstruction procedure. The goal of the trial was to prove the clinical validity of LV reconstruction. In final analysis, the STICH trial concluded LV reconstruction improved survival rate, which became statistically significant when achieving an LV volume reduction of at least 30% and/or reaching a post op LVESVI ≤60mL /sqm^2.

Fig. 2 History of Surgical Ventricular Reconstruction

Phase	Technique	Year	Treatment
1	Cooley	1958	Linear repair of LV aneurysm
2	Stoney	1973	Lateral edge of the myocardium is sutured to the interventricular septum
3	Dor	1980s	Endoventricular Circular Patch Plasty
4	Revivent TC	2013	1st Minimally invasive transcatheter ventricular reconstruction using micro anchor technology

In 2016, the Revivent TC™ Transcatheter Myocardial Anchoring System received CE mark. In EU clinical trials, the Less Invasive Ventricular Enhancement (LIVE) procedure utilizing the Revivent micro anchors proved the technology was capable of providing outcomes equal to surgical intervention but without the invasive limitations of the predicate SVR procedures.

The Revivent TC™ System arrests the underlying cause of ischemic dilated cardiomyopathy by reducing wall stress through circumferential reduction. The hybrid transcatheter procedure is performed by both a Cardiologist and Cardiac Surgeon, working in tandem, to reconstruct the aneurysmal LV by plication and exclusion of the infarct. The reduction of the excess LV volume decreases the wall tension resulting in an improvement in EF and other clinical parameters.

The Revivent TC™ System deploys a series of internal and external micro anchors brought together over a tether to form a line of apposition between the LV free wall and the anterior septum. Internal anchors are deployed along the right ventricular (RV) septum by the Cardiologist with a transcatheter technique from the right internal jugular vein. The paired external anchors are advanced by the Cardiac Surgeon through a left sided mini-thoracotomy and deployed on the LV epicardium. A specialized force gauge is used from the left side to bring the internal (RV) and external (LV) anchors together to plicate and exclude the infarct from the LV cavity using a controlled and measured application of force. To complete the reconstruction, LV-LV anchor pairs are implanted through the LV apex As determined in the STICH trial, the Revivent TCTM System exceeds the clinical threshold required to beyond the distal tip of the RV to restore conical geometry. The procedure is performed without cardiopulmonary bypass nor ventriculotomy.

Fig. 3: Internal and External Anchor

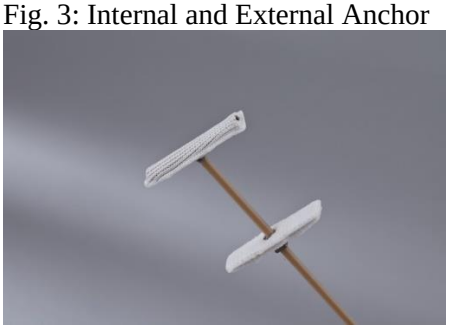


Figure 4: Drawing of placated antero-lateral scar onto interventricular septum

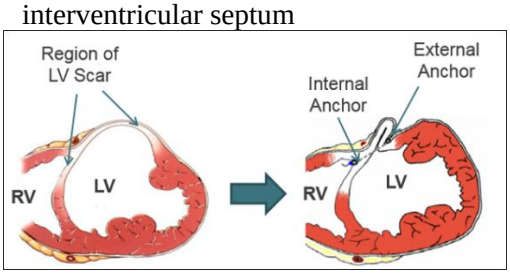
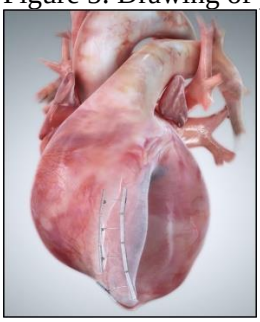


Figure 5: Drawing of plicate anchors pairs



The Revivent TCTM System has demonstrated a durable effect in significant clinical parameters that include the most predictive indicator of survival, LVESVI5. The mean post op LVESVI for Revivent TCTM System patients was 39 mL/m2 in a cohort of ~50 patients in a post CE mark evaluation.

Fig. 6 Hemodynamic Clinical Results6

	EFpre	EFpo	LVESVIpre ml/m^2	LVESVIpo ml/m^2	LVEDVIpre ml/m^2	LVEDVIpo ml/m^2
N	55	54	54	53	53	51
Mean	28	37	68	39	96	59
%Change	33%		-43%		-39%	

significantly impact the survival of ischemic HF patients (LVESVI, 39 mL/m2 vs. ≤60mL /m²).

Additionally, the mean 43% LVESVI volume reduction improves the efficiency of heart function, which results in a mean EF increase of ~10%. Importantly, QOL and exercise capacity also improved more than 20% in this cohort. These results indicate the Revivent TCTM System should be strongly considered as a less invasive addition to the spectrum of treatments for ischemic heart failure patients.

Left Main Intervention in Yemeni Patients

Dr. Tayeb Ali Bafadhel
MD Cardiology Head of cath. Lab in Nabdh Al Hayat Cardiac Centre, Mukalla

Left main coronary artery arise from the superior portion of left aortic sinus just below the sinotubular junction. Significant left main, defined as a >50% narrowing, and found in 5-7% of all patients who undergo coronary angiography.

Left main coronary artery disease is associated with high morbidity and mortality owing to the large amount of myocardium at risk, So European and U.S. guidelines recommend that most patients with left main coronary artery disease undergo coronary-artery bypass grafting (CABG) . Randomized trials have suggested that percutaneous coronary intervention (PCI) with drug-eluting stents might be an acceptable alternative for selected patients with left main coronary disease

Nabdh Al Hayat Cardiac Centre , first cardiac charity in Yemen located in Mukalla, Hadramout, Yemen started working in April 2017 with local team , within 2 years, 4234 cases of diagnostic and coronary intervention was done without the missions. 27% of cases done was coronary intervention. left main intervention represent 3.5% of PCI cases (fig 1) with most of cases were male (77%), young age and had risk factors of diabetes and hypertensive (table 1). Drug Eluting stents used in all cases except one case used bare metal stent because of size was not available, and Radial approach was done in 50% of cases. 40 cases of LM intervention considered small number in comparison with total number of PCI cases done for many reasons; selection of simple cases, Heart Team meeting (non-interventional, interventional cardiologist and cardiac surgeon) and use of risk stratification scores (syntax, Euro Score). The learning curve of LM intervention in Nabdh Al Hayat Centre is increased with nowdays reached 4%

Fig.1: percentage of LM intervention to total of PCI done

Variable	
Mean Age ±SD	58.4 ±[9.6500] Yrs
Male n(%)	31 (77.5%)
DM n(%)	14 (35.0%)
HTN n(%)	17 (42.5%)
Hyperlipidemia n(%)	22 (55.0%)
Smoker n(%)	9 (24.5%)
Oral tobacco n(%)	3 (7.5 %)
Khat chewer n(%)	7 (17.5%)
Family Hx. n(%)	10 (25.0%)
Mean EF% ±SD	56.5 ± [9.8080]

Table !: Baseline characteristics of LM PCI Yemeni Patients_

Nonalcoholic Fatty Liver and the Heart

Prof. Alaa M. Ibrahim, MD

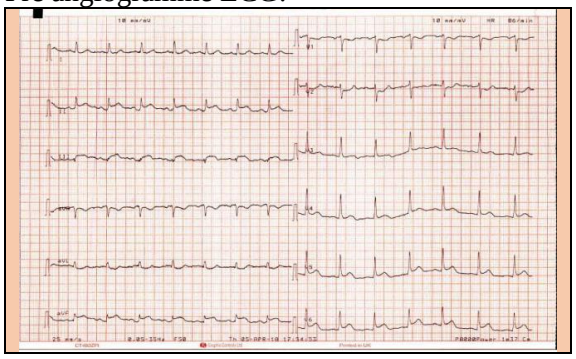
Nonalcoholic Fatty Liver (NAFLD) and CVD are both manifestations of end-organ damage of the metabolic syndrome. Both are associated with each other through multiple pathophysiological mechanisms. Systemic inflammation, endothelial dysfunction, hepatic insulin resistance, oxidative stress, and altered lipid metabolism are some of the mechanisms by which NAFLD increases the risk of CVD through increased (accelerated) atherosclerosis, cardiomyopathy, and arrhythmia,

STEMI Mystery: Case Report of A 41 Year Old Presenting With Chest Pain

Dr. Falik sher, Dr. Kamal Chitkara University Hospitals of Derby and Burton Derby, United Kingdom

A 41 year old male prisoner presented with sudden onset chest pain while doing workout at Gym. He was an active smoker and denied any drugs intake. He had no other past medical or family history of note. His initial ECG was consistent with infero-lateral STEMI. He was taken to catheter laboratory for primary percutaneous coronary intervention. He was loaded with aspirin and prasugrel.

Pre angiogramme ECG:



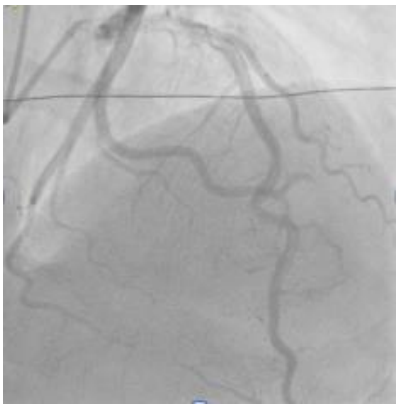
His coronary angiogram showed a normal right coronary artery, left main stem and left anterior descending artery. There was mid vessel occlusion of large obtuse marginal branch of left circumflex artery.

RCA

LCA

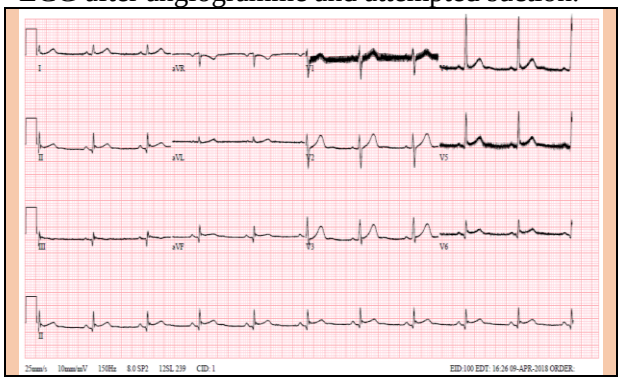
LCA

He was given IV heparin and then a whisper MS wire was used to cross the lesion into distal artery followed by attempted aspiration of the thrombus but was unable to do it due to mechanical failure of the system. We took a new EBU3.5 catheter and further diagnostic picture showed the thrombus has moved very distally in the vessel and at the same time ECG changes has resolved and he was pain free. As there was no underlying lesion/stenosis was identified we didn't proceed with stenting. A Tifofeban infusion was started.



Post attempted aspiration

ECG after angiogramme and attempted suction:



He had an urgent transthoracic echocardiogram done which showed mild LV impairment and mobile echogenicity measuring 3.5 x2.1 in the left atrium attached to intra atrial septum which was likely consistent with myxoma.

We concluded that he had acute MI secondary to embolization from his atrial myxoma. He was discussed with cardiac surgeons and went on to have myxoma resection. He has made a remarkable recovery and has been through his rehab programme successfully.

Echo image:

Discussion:

Coronary artery embolism is an underdiagnosed condition in clinical practice. Although the exact incidence is not known but Japanese retro respective analysis had shown 3% prevalence in ACS patient (1). The possible causes of Coronary emboli are classed into three groups. {Table 1}

Table 1

1.Direct:	These are emboli which originate from left atrium, left ventricle, aortic or mitral valves and proximal coronary arteries.it can be thrombus, valvular material or tumour
2. Paradoxical:	These are the emboli from deep venous system that cross the patent foremen ovale, atrial septal defects and pulmonary vascular malformations
3.itarogenic:	These are the emboli that occur after interventions like valve replacements or coronary intervention

Atrial Myxoma as cause of embolic MI has been reported in case studies. Atrial myxoma is most common benign primary cardiac tumour with incidence of 0.2% on unselected autopsy and 13 % on a case series of acute MI patient autopsy. It is mainly seen in left atrium. These patients can present with intracardiac obstruction, embolization and constitutional symptoms. Embolism is well known complication of Myxoma seen in 30-50% of patient. Coronary embolization from atrial myxoma has been seen in 0.06%.The angiographic finding in these patient vary. Panos et al in his worked on left atrial myxoma patient presenting with myocardial infarction concluded that normal coronary arteries were found in 23.8% of cases. Right coronary artery was involved in 47.6% of cases, whereas left anterior descending artery and left circumflex coronary artery accounted for 19% and 9.5% of cases respectively.

Surgical resection is the treatment of choice but some

cases need additional coronary intervention or coronary artery Bypass graft if there is subtotal or total occlusion of artery. Follow-up echocardiography is also recommended as there is 2-5% recurrence rate.

Conclusion:

In our opinion interventional cardiologist should look for red flag signs when coming across cases of embolic coronary artery occlusion with other wise angiographic ally normal arteries. An early and thorough search for possible causes can improve the clinical outcome.

Subclinical Hypothyroidism & Hypertension: Fact or Myth?

Dr. Hanaa Tarek El-Zawawy Lecturer of Endocrinology, Faculty of Medicine, Alexandria University

Subclinical hypothyroidism (SCH) is defined as an elevated serum TSH level > 4.5 mIU/L in the presence of normal FT4 level.

SCH is considered the most prevalent thyroid disorder affecting the adult population with an estimated prevalence of 3% to 18%. Iodine deficiency is the most common cause worldwide, while in areas of iodine sufficiency, as in Egypt, the most common cause is Hashimoto's thyroiditis.

Subclinical hypothyroidism and hypertension:

SCH has been found to be associated with increased risk of various cardiovascular diseases including; hypertension, coronary heart disease, heart failure, and cardiac mortality.

Hypothyroidism is a well known cause of secondary hypertension. Thyroid hormones relax vascular smooth muscle cells, thereby reducing peripheral vascular resistance. Thus, in hypothyroidism, increased peripheral vascular resistance & increased arterial stiffness play a pivotal role in the development of hypertension. In addition, sympathetic nervous system activation, decrease in glomerular filtration rate, abnormalities of sodium metabolism and endothelial dysfunction may also contribute to the pathogenesis of hypertension in hypothyroidism.

Recently it has been claimed that SCH is considered an important risk factor for hypertension as the aforementioned mechanisms can do occur very early in mild thyroid failure before the development of overt hypothyroidism. Even though within normal BP limits, patients with SCH were found to have significantly higher diastolic blood pressure compared to controls. Additionally, a relationship between SCH and non-dipping has been reported in normotensive patients. Up-to-date studies found that both the frequency of diastolic non-dipping pattern and diastolic blood pressure increase with SCH.

Effect of treatment of SCH on blood pressure control:

Randomized trials have discovered beneficial cardiovascular effects on treating SCH with levothyroxine. One study has reported an effect of T4 replacement for 6 months to reduce blood pressure & carotid intima thickness in patients with SCH, while another recent double-blind placebo-controlled study has demonstrated improved blood pressure in patients with SCH following 12 weeks of treatment through improvement of endothelial function. Moreover, in a study of women with SCH, 18 months of treatment with levothyroxine resulted in normalization of systolic and diastolic blood pressure as well as decreased carotid intima thickness.

European Thyroid Association guidelines recommend replacement therapy with levothyroxine for patients with SCH and cardiac disease; a small dose of levothyroxine (25 or 50 mcg) should be started with gradual titration until a full replacement dose is achieved.

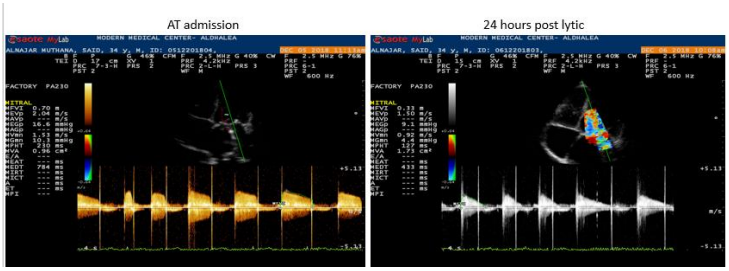
Conclusion:

Lately SCH has been recognized to be a cause of hypertension. Therefore, subclinical hypothyroid subjects should be regularly screened for hypertension. Patients with SCH and hypertension should be treated with levothyroxine therapy to control blood pressure

Successful Thrombolytics for Occlusive Prosthetic MV Thrombosis in Yemeni Patients

Motea Al-Awlaqi Cardiac unit, Department of internal medicine, Aden University, Faculty of Medicine, Aden, Yemen

Prosthetic valve thrombosis is a rare but a serious and potentially lethal complication of valve replacement. Despite advances in surgical techniques and perioperative care, surgical mortality remains high and emergent cardiac surgery is not widely available. Herein, we present two cases of an acute PVT successfully treated with thrombolytic therapy. The first case is A 43-year-old female presented to the emergency department with acute onset of shortness of breath. Her medical history was remarkable for mitral valve replacement seven months prior to presentation. Her symptoms began three days with progressive shortness of breath, till she suddenly presented severe resting dyspnea. At arrival she showed pulmonary edema and hemodynamic instability. Echocardiography showed a prosthetic mitral valve with reduced leaflets motion and mean gradient of 12 mmHg. Treatment was started with streptokinase (short protocol) and the patient presented marked clinical improvement in subsequent hours. The second case is A 34-year-old male presented to the emergency department with acute onset of shortness of breath. His medical history was remarkable for mitral valve replacement four years before. His symptoms began five days with progressive shortness of breath, at arrival he showed pulmonary edema but hemodynamic stability. Echocardiography showed a prosthetic mitral valve with reduced leaflets motion and mean gradient of 11 mmHg. Treatment was started with streptokinase (standard protocol) and the patient presented marked clinical improvement in subsequent hours. Recent evidence suggests that thrombolysis could be elected as the first choice of treatment in patients with left-side PVT because of the effectiveness, safety profile, availability, and low cost. These cases illustrate the importance of prompt diagnosis and treatment and proposes thrombolytic therapy for PVT as an option at least as efficient as and far more accessible than surgery.



Surgical Management of Tricuspid Valve Endocarditis

Hesham Alkady, MD Professor A. at the department of cardiothoracic surgery, Cairo University.

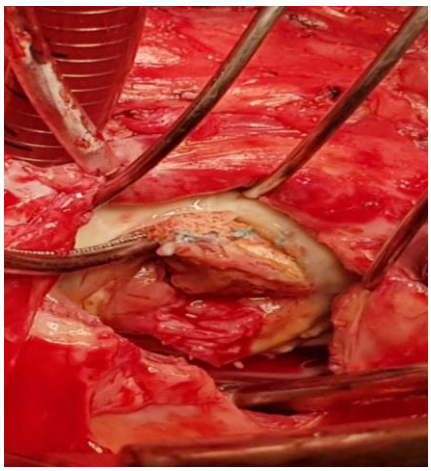
Tricuspid valve endocarditis represents 70% of right-sided endocarditis which in turn accounts for 5%–10% of all cases of infective endocarditis. Nevertheless, the incidence now is rising due to the increasing frequency of intravenous drug-abusers.

Diagnosis is dependent, in addition to the clinical picture, on blood cultures as well as echocardiography.

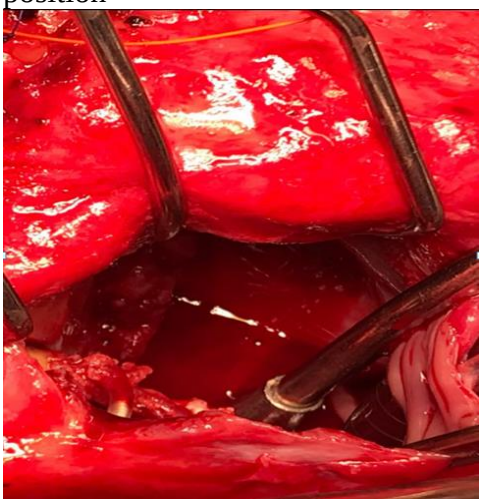
Surgery is required in 25% in acute infection and up to 50% of cases within 2 years. Indications of surgery include**;** persistence of infection beyond 2 weeks despite adequate antibiotic therapy (evidenced by recurrent septic pulmonary emboli on pulmonary angiography, impending septic shock, persistence or increase of the size of a vegetation >1 cm or spread of infection to the annulus or other valves), persistent of right (and subsequently impending left) ventricular failure due to massive or worsening tricuspid regurgitation, occurrence of acute renal and/or

hepatic failure as well as failure of percutaneous removal of infected intra-cardiac wires.
The aim of surgery is radical debridement of vegetations and infected tissue as well as restoration of adequate right ventricular inflow from the right atrium. Valve repair with autologous pericardium avoiding artificial material is the first line of surgical management, but if not feasible, then tricuspid valve replacement should be performed. In general the choice of type of prosthetic valve is dependent on age, contraindication to anticoagulation, sex (woman in child-bearing age), co-existence with another prosthetic valve, history of thromboembolic complications and existence of chronic atrial fibrillation. However there is still a debate regarding the use of biological or mechanical prostheses in the tricuspid position due to anticoagulation difficulties on one side and the valve durability with subsequent need of reoperation on the other side.

Surgical mortality rate has improved from 30% in the 1970s to 7.4–9.9% in the 2000s. Reoperation rate for recurrent endocarditis is estimated now to be 5%. Intravenous drug- abusers have the worst results e.g. prosthetic thrombosis due to low compliance with anticoagulant therapy and reinfection related to resumption of drug abuse. Survival
rates in such patient group after 1, 5 and 10 years are 65, 35 and 35%, respectively while the reoperation rate for recurrent endocarditis is 17%.



Endocarditis on biological valve in tricuspid position



Endocarditis on native tricuspid valve

The Art of Cardiology practice & pharmacotherapy among Health Care practitioners in Saudi Arabia

Fakhr Zohair AlAyoubi, MSc, RPh, MBA

Pharmacotherapy updates is an important aspect of providing better patient care in all specialists especially in cardio-metabolic syndrome. Successful clinical pharmacist's updates in this field will increases patient satisfaction and results in outcomes & adherence. My participation is going to be in three parts including presentations, workshop & chairing person.

Part I: the attitude of the Saudi community towards heart donation & transplantation and artificial heart, this will cover our experience also the update recommendations and regulations that match with our culture and the level of acceptance as well as the barriers of heart transplant in the Saudi culture.

Part2: update in the ACC/ AHA and other international guidelines for cardiovascular therapy & if there is national guidelines to follow in this field. how to implement it in Saudi Arabia, the specialized multidisciplinary programs. It will presents the strengths and limitations of these programs based on

recognized barriers to effective patient education strategies, in addition we examined evidence supporting the utilization of cardiology update pharmacotherapy to benefit patient care in poly-pharmacy patients.

Therefore, in this workshop I will focus on our individual patient-education strategies and their inherent strengths and weaknesses. In evaluating the multidisciplinary module in Heart Failure program and correlate that by clinical outcomes thru up titrating the pharmacotherapy plan.

Part 3: Effect of fasting during Ramadan on efficacy and safety of oral anticoagulant. In this presentation I will focus on how to safely practice your religion with better out comes of medicates, hoping to create a better understanding of what generates optimal patient care by education strategies. Successful education is ultimately dependent on choosing an effective method of education that is appropriate for the patients care.

The Impact of Left Atrial Function

Professor Michael Henein Umea University Sweden *St George London and Brunel University, UK*

The left atrium (LA), wrongly called the left heart collecting chamber, plays an important role in maintaining the overall cardiac function in health and disease. The LA function is determined by cavity size and complex myocardial structure, although its thickness is only 3 mm, so significantly less than that of the left ventricle (LV). LA myocardial fibre bundles take different shapes, number and position, sub-epicardial versus subendocardial. Add to the complexity of the chamber is its 4 inflows (pulmonary veins) and its outflow (the mitral valve) with its relationship to the annulus, chordae, papillary muscles and longitudinal as well as circumferential LV muscle fibres. Of note, despite the basal LA muscle fibres are predominantly circumferential, they differ from their LV counterpart in being incomplete, particularly at the medial part.

In contrast to the LV, the LA has more than one function. During early diastole as LA pressure rises above that of LV, the mitral valve opens and early diastolic filling phase takes place with significant acceleration determined by the released LA myocardium restoring forces from the previous systolic phase, and is completed with the pressure equalization between the two chambers. This phase is followed by a brief period of diastasis with no significant circulation between the two chambers, except in patients with severe LV disease and raised diastolic pressures, in whom a flow reversal might be detected with pulsed Doppler across the opened mitral valve. Finally, after the P wave and complete atrial depolarization, LA myocardium contracts and fills the LV with the second component, which correlates directly in its peak velocity with age. Thus, LA could be seen as having three function components, reservoir, conduit and pump, respectively.

The LA differs from the LV in its response to intracavitary pressure rise. While LV responds to increases in pressures by developing myocardial hypertrophy, the LA with its 3 mm thin wall develops myocardial stretch and cavity dilatation. Slow rise in pressure and slight cavity dilatation could be accommodated for a while but eventually cause electric instability and arrhythmia e.g. frequent SVEs and fibrillation. Likewise, although less common, increases in exterior wall tension by aortic root dilatation may have similar effect. Perpetual rise in LA pressure eventually affects cavity compliance causing raised pulmonary venous pressure and breathlessness, even in the absence of mitral regurgitation. With such close relationship changes in LA size and myocardial function, the intra-cavitary could accurately be predicted. LA volume index >34 ml/m^2 or reduction of peak atrial longitudinal strain <19 % have been shown to predict raised LA pressure >15mmHg. Similar values have also been found to predict failure of catheter ablation and recurrence of atrial fibrillation.

Finally, LA electromechanical function, irrespective of the underlying cardiac pathology, is of significant clinical impact. Progressive increase in LV diastolic pressure, increases of LA pressures and size, its cavity function reduce and the incidence of atrial arrhythmias increases. These changes correlate with the progressive broadening of the P wave overtime. Eventually, such deterioration of LA function is reflected on its emptying, LV filling volumes and the perpetual rise of pulmonary venous pressures and worsening of symptoms.

The Impact of Obesity on The Pharmacokinetics of Drugs Used in Cardiovascular Settings

Noha A. Hamdy, PharmD, PhD Department of Clinical Pharmacy & Pharmacy Practice, Faculty of Pharmacy, Pharos University in Alexandria, Alexandria, Egypt

Obesity is associated with a substantially increased risk of cardiovascular disease. Cardiovascular-related sequelae of obesity include hypertension, coronary artery disease, stroke, type 2 diabetes mellitus, and dyslipidaemia. Obesity has increased markedly in prevalence over the past 4 decades and currently affects 500 million individuals worldwide (WHO, 2014). The effect of obesity per se on drug pharmacokinetics (drug disposition pathways) and pharmacodynamics (drug response) requires consideration.

Although the presence of excessive adipose tissue is the most obvious change that occurs in obese individuals, other physiologic changes are present. While adipose cells contain >90% fat, there are additional supportive tissues, extracellular fluid, and blood present in adipose tissue, which leads to some lean tissues hypertrophy.

Alteration in pharmacokinetic parameters is discussed.

Absorption of subcutaneous & transdermal routes is reduced, while oral absorption is increased due to increased gastric emptying rate. Volume of distribution alteration depends largely on lipophilicity and tissue partitioning, or hydrophilicity and extent of drug distribution in body fluids. So, for lipophilic drug, loading dose is calculated based on total body weight (TBW) as for tricyclic antidepressants or lean body weight (LBW) as for lipophilic B-blockers due to greater distribution in lean tissue. While hydrophilic drugs with small volume of distribution, loading dose is calculated based on ideal body weight as for aminoglycosides.

Regarding clearance in obese patients, hepatic metabolism by CYP3A4 is reduced while CYP2E1, 2D6, 1A2, 2C9, 2C19 activity is increased. Increased glomerular filtration rates in obese patients will affect renally eliminated hydrophilic drugs and will increase the renal clearance of these agents.

Loading dose of IV Verapamil in obese patients is based on TBW & maintenance dose is based on IBW, in addition some alteration in Verapamil pharmacodynamics were also noted.

Obese individuals have higher platelet reactivity known as “obesity paradox”, in which obese patients have better post-acute coronary syndrome outcomes & lower risk for re-infarction or death. However, obese individuals may have altered responses to antiplatelets, anticoagulants and other drugs.

Large scale studies should be designed to tailor drug doses based on pharmacokinetic properties of drugs, pharmacodynamic alterations in obese individuals & also clinical responses (blood pressure, lipids, glucose, etc.). To conclude, fixed-dose drugs should not be applied for obese patients.

The Mysterious Mitral Mass!

Dr. Ahmed Mohsen Mohamed Assistant lecturer of Cardiology
Cairo University

A 30-year old man, presented with manifestations of ***left sided heart failure*** that have been started 1 month before admission.

ECG showed NSR. Laboratory investigations were normal apart from ***abnormal renal function*** (baseline creatinine of 3.5mg/dl).

During his hospital stay, the patient developed ***acute stroke*** .

TTE showed dilated LV internal dimensions with impaired contractility ***(EF35%)*** and ***severe mitral regurge*** .It also showed a rounded ***mass*** related to the base of the ***posterior mitral leaflet***.

2 D and 3 D TEE revealed that this ***mass is attached to the mitral annulus*** and suggested that it is ***most probably thrombus*** for further assessment by CMR.

Thrombophilia screen was ordered and it was positive ***for primary antiphospholipid syndrome.***

CMR was suggestive of ***Libman sacks endocarditis***.

Renal biopsy which was done to unmask the etiology of renal impairment and showed evidence of ***focal segmental glomeruolsclerosis*** .The final diagnosis was made as a ***case of primary antiphospholipid syndrome with multisystem affection.***

The patient received anti-failure measures, anticoagulation and immunosuppressant therapy.

After 1 month, follow up echocardiography was done and showed improvement of left ventricular function***(EF went up to 41% instead of 35%)*** as well as severity of the mitral incompetence ***(it became moderate instead of severe)*** with marked regression of the mitral mass ***(it became only 5mm instead of 15mm).***

The patient showed marked improvement of his neurological symptoms with significant improvement in the creatinine level (***the creatinine dropped to 1.7 mg)***

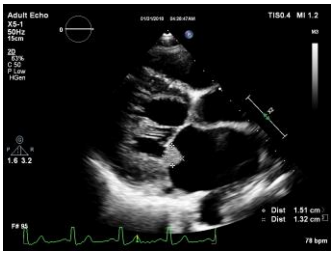
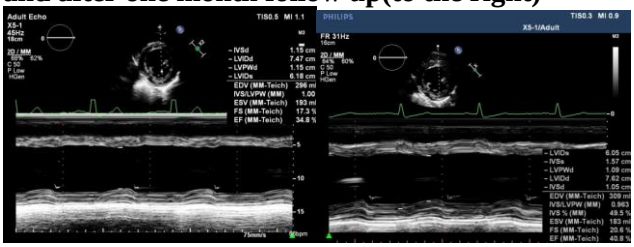
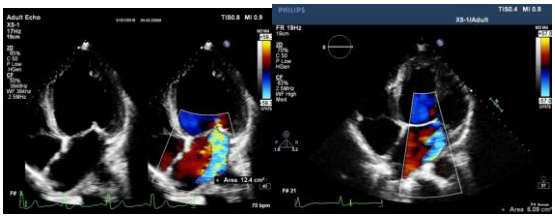


Figure 1:2D Transthoracic Echo, Parasternal long axis view showed rounded mass related to base of the posterior mitral leaflet that measures 1.5x1.3cm

Comparison between The transthoracic echocardiography findings on admission (to the left) and after one month follow up(to the right)





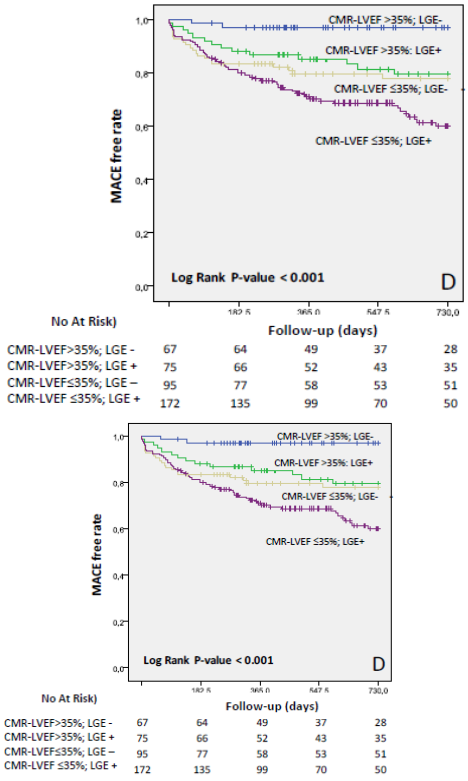
The Role of CMR in Predicting SCD

Marco Guglielmo, MD FSCCT Cardiologist with specific interest in cardiac imaging (echocardiography, cardiac MRI and Cardiac CT)

Sudden cardiac death (SCD) is the most common cause of cardiovascular death averaging 300–400,000 deaths in the United States annually. In the last years the role of cardiovascular magnetic resonance (CMR)-based tissue characterization emerged as one of the most promising tools for identifying the anatomic substrate of life-threatening arrhythmias. This technique holds the unmet possibility to noninvasively visualize, quantify and precisely characterize the myocardial scar as well as interstitial fibrosis by late gadolinium enhancement (LGE) and T1-mapping techniques, respectively. Implantable cardioverter defibrillators (ICDs) are effective therapy for preventing SCDin high-risk individuals.

However, up to one-fourth of patients with an ICD experience inappropriate shocks, which significantly affects quality of life and is a cause of morbidity and mortality. In addition, most patients will need at least one ICD replacement over their lifetime, with 40% requiring two replacements with consequent additional complications and costs.6 Hence, it is imperative to correctly identify those patientswho will not benefit from prophylactic ICD implantation. Importantly, SCD may also occur in patients with normal to moderately depressed LVEF and thus, even in this subset, a large number of patients needing prophylactic ICD therapy exists. Cardiac MRI (CMR) is proving to be an effective modality in better selecting patients who will benefit from ICD implantation. It represents the reference technology for cardiac functional and structural evaluation Several studies showed that the presence of myocardial fibrosis provides a substrate for malignant ventricular arrhythmias and SCD.

Through the use of the late gadolinium enhancement (LGE) technique it is possible to accurately identify and quantify ventricular myocardial fibrosis. The interest regarding infarct size results from its relationship with ventricular arrhythmia induction and propagation. The fibrous tissue formed during the healing process after myocardial infarction or resulting from an inflamed heart induces slow and heterogeneous conduction favoring intramyocardial reentry from nonuniform anisotropy and electrophysiological dysregulation with a higher risk for ventricular tachycardia. A recent study by Pontone et al. evaluated 409 consecutive nonischemic DCM and ICM patients referred for evaluation of prophylactic ICD implantation who underwent transthoracic echocardiography (TTE) and CMR and followed for a median of 545 days. One hundred and three patients experienced a major adverse cardiovascular event (MACE), defined as a composite endpoint of sustained ventricular tachycardia, long runs of nonsustained ventricular tachycardia, aborted SCD, and SCD. The lowest risk occurred in patients with LVEF more than 35% and no LGE. Individuals with positive LGE had a higher rate of events (_20%). Importantly, in the subset of patients with a TTE-LVEF between 30 and 40%, the addition of CMR-LVEF with positive LGE to a model including clinical data and TTE-LVEF provided a significant enhancement in outcome prediction with a net reclassification improvement of 0.42. Therefore, these findings support the utilization of CMR for SCD risk stratification, especially in those with borderline TTE-LVEF as it can identify patients in which ICD implantation may be beneficial.



Pontone et al. Circulation 2016

Venous Anomalies in Isomerism

Sameh Arab

Normally, internal organs are not mirror images of each other. Isomerism, or mirror-imaged structures is a situation where some paired structures on opposite sides of the left-right axis of the body are symmetrical mirror images of each other. Hence, Left Isomerism (LI) is heterodoxy with some paired structures on opposite sides of the body are symmetrical mirror images of each other, & have the morphology of the normal left-sided structures. The same applies to Right Isomerism (RI), with the morphology of right structures.

Almost without an exception, patients with RI have pulmonary outflow tract obstruction, common mixing situations, & pulmonary atresia, while those with LI generally have less severe cardiac malformations.

Pulmonary Venous abnormalities in Isomerism:

Normally, the pulmonary veins are widely-spaced & connect to the posterior border of morphological LA (non-confluent). In RI, the pulmonary venous connection by definition is anomalous. The four veins crowd together to drain via a small confluence or directly to the atrial roof.

Anomalies of Superior Vena Cava (SVC) include: (1) bilateral SVC, with a persistent left and patent right SVC; (2) persistent left and absent right SVC; (3) Right SVC draining into LA with a small sinus venous ASD. The presence of bilateral SVC in LI is anatomically anomalous, while in RI is anatomically normal.

A persistent Left SVC (PLSVC) drains behind LA into the coronary sinus (CS), causing its dilatation. If the CS is not normally developed, the PLSVC drains into the LA, and cyanosis results. Injection of contrast in left arm with bubbles appearing in the LA & ventricle is diagnostic of PLSVC.

Bilateral SVC is more common in RI. The two vascular structures may communicate via an innominate or bridging vein.

Hepatic Venous Connections are classified into:

(1) Normal: the hepatic veins connecting to IVC at or near the entry into RA

(2) Partial anomalous hepatic venous connection (PAHVC):

Normal connection of some hepatic veins to IVC with separate connection of other hepatic vein(s) directly to an atrium

(3) Total anomalous hepatic venous connection (TAHVC): Separate hepatic venous connection directly to an atrium via one or more veins.

In LI when the IVC is interrupted; the hepatic veins may drain into the atrial chamber(s) either unilaterally or bilaterally (non-confluent) or through a supra-hepatic channel (confluent). Bilateral atrial drainage of the hepatic venous channels, and a single anomalous hepatic vein draining into LA were reported in LI. In a 3-months infant with RI, the right & middle hepatic veins joined the IVC to drain into the right atrium, while the 2 left hepatic veins terminated into the left-sided atrium.

In Alexandria University (2001) we studied the hepatic venous drainage into IVC or atria by echo & angiography in 8 patients with LI (age: 1.7 – 12 Y (4.7 ± 3.4, median = 3.6). Seven had non-confluent connection, and in one case there was a Supra-hepatic confluence to both sides of a common atrium.

VTE in Brief

ELSayed Farag

The risk
Imaging CT ,Echo
Reperfusion
Anticoagulation consider NOACs
Provoked or unprovoked (1st or 2nd)
CTEPH, Cancer
Duration of treatment (risk of recurrence and bleeding risk.)

Duration of anticoagulation

Provoked(3months) (Extended) (temporary& reversible cause)	Unprovoked Absence of cause
Trauma , surgery , immobilize balance BW risk& bleeding	Assess
Pregnancy, OCCP risk	Recurrence

Unproved risk recurrence assessment ???
1- Previous one or more episode of VTE
2-More proximal DVT
3-Hereditary thrombophilia
4- persistence of RV dysfunction on hospital discharge as assessed by echocardiography.

A negative D-dimer test one month after withdrawal of
VKA seems to be a protective factor for recurrence of VTE

Section (3):
CASE PRESENTATIONS

ASD Sinus Venosus (IVC Type)

Alaa Khalil

40 years old male presented to cardiology OPD with H/O Palpitations on and off-on moderate exertion. Increased in intensity over last one year Not associated with chest pain, syncope or SOB.

No history suggestive of Cardiac Failure.

No H/O fever/joint pain/swelling/ rashes/cough with expectoration.

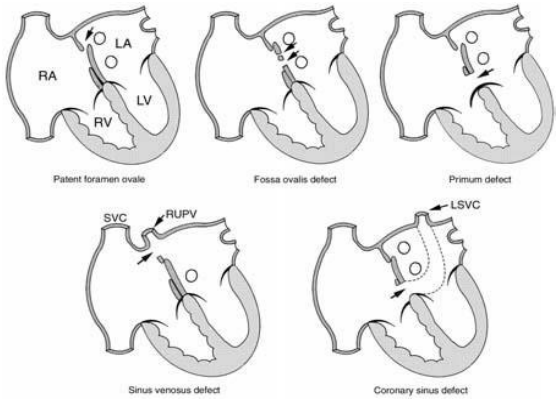
No history suggestive of Recurrent Respiratory Tract Infections/Cyanotic Spells/RHD

Clinical examination : was unremarkable

ECG : NSR , normal axis , no significant changes

CXR : Mild cardiomegaly , clear lung field.

Trans thoracic Echo revealed mild dilatation of right side of the heart with QP/QS: 1.4/1. Trans esophageal Echo revealed drop out point and left to right shunt by colored doppler at the mouth of inferior vena cava which was diagnosed as ASD sinus venosus IVC type. From Literature Review, ASD can be classified into:



Ostium secundum defects (75%- 85% of ASDs) are located in the region of the fossa ovalis.

Ostium primum defects (10 - 15%) occur in the lower portion of the atrial septum.

Sinus venosus defects (5 - 10%) are located near the orifice of the superior vena cava.

Sinus venosus defects of IVC type (1%).

Coronary sinus (1%) septal defect (in which a defect between the coronary sinus and the left atrium allows a left-to-right shunt to occur through an “unroofed” coronary sinus).

In cases of superior sinus venosus defect, the hole is located superiorly to the fossa ovalis, which can itself either be intact or deficient.

Inferior sinus venosus type atrial septal defect (ASD) is a rare congenital cardiac deformity that occurs between the IVC and right atrium.

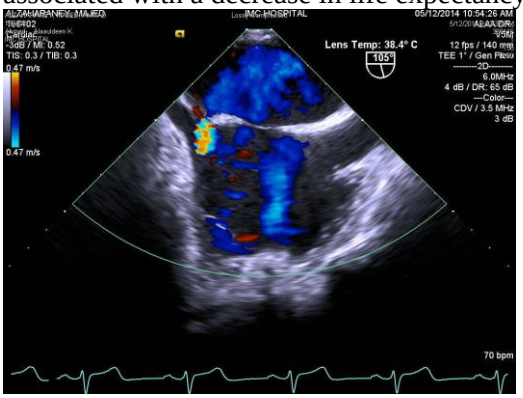
The fossa ovalis region of the interatrial septum is intact.

Differential Diagnosis: Atrial septal defect, coronary sinus type.,Partial Anomalous Pulmonary Venous connection.,Atrial Septal Defect, Ostium Primum type. Atrioventricular Septal Defect, partial and intermediate type.

COMPLICATIONS: Symptoms of exercise intolerance and fatigue/CCF ,Atrial arrhythmias ,Pulmonary hypertension ,Systemic embolization and Reduced life expectancy.

Prognosi: The prognosis is excellent for young patients who undergo repair of uncomplicated defects.

Repair delayed until the third decade of life is associated with a decrease in life expectancy



Section (4): CASE REPORTS

Chordae Tendinae Rupture in A Patient with Acromegaly

Ramya Parasa, Hossam El- Gendi. Department of Cardiology, Princess Alexandra University Hospital, Harlow, UK.

Introduction

The common cardiovascular complication in patients with Acromegaly is Cardiomyopathy secondary to excess Growth Hormone (GH) and Insulin like Growth Factor 1 (IGF-1), correlating proportionately with disease duration. This has been explained in various articles as a cumulative effect of disease process and acromegalic cardiomyopathy as a leading cause of death in patients with this condition.

Chordae tendinae rupture is a rare cardiovascular complication in patients with Acromegaly. As far as we are aware only two cases have been reported so far, in 1990 and in 1985. Not much of a study has taken place in this area and not much of an explanation has been obtained as to the mechanism of papillary muscle rupture.

Here we present a patient with Acromegaly associated with chordae tendinae rupture which was successfully managed with a valve replacement.

Case presentation

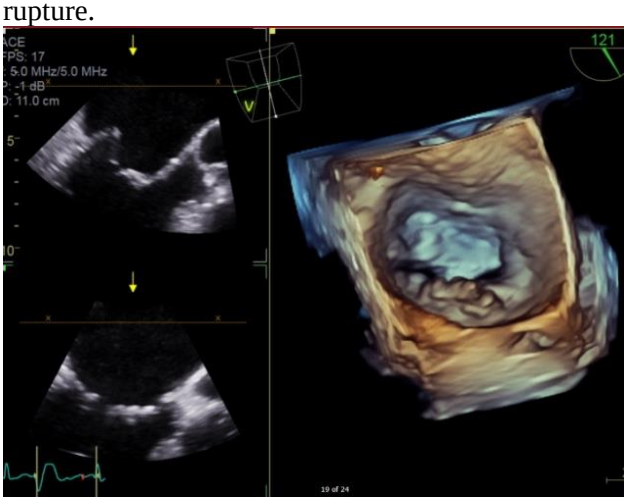
A 72yr old gentleman with a background of Type 2 Diabetes, Hypertension and Acromegaly presented with exertional dyspnoea of few weeks duration and was found to be in decompensated heart failure on hospital admission. He was diuresed and a transthoracic echocardiogram (TTE) was performed. The images were suboptimal due to high body mass and showed dilated left ventricular cavity size with mild concentric hypertrophy and dynamic function. The report mentioned morphologically normal mitral valve leaflets with mild eccentric regurgitation. As the patient went into flash pulmonary oedema on two occasions requiring optiflow, further investigations were performed to investigate the causes. A troponin was only mildly raised and a CT pulmonary angiography ruled out pulmonary embolus. Blood cultures did not yield any growth.

As the patient was clinically not making any improvement a review of our differential diagnoses were called for.

A repeat TTE was obtained which this time showed better quality images and a clear rupture chordae tendinae causing prolapse of the posterior mitral valve leaflet and severe posteriorly directed regurgitation. He was discussed with surgeons and underwent a mitral valve replacement. A diagnostic angiogram showed no evidence of coronary disease.

Key points

1. TTE is immensely helpful in arriving at a diagnosis in patients with structural heart disease.
2. It is important to re review the case scenario and clinical findings and correlate with other medical conditions to assess for any contributing factors.
3. Acromegalic cardiomyopathy is a known condition, very little is known of the condition to lead to valvular disease especially chordae tendinae rupture.



Successful Management of Dislodged Stent in Distal Left Main; A Case Report

Dr. Khatira Zaheen, MD, Dr. Razmi Rahman, MD
Amiri Medical complex, department of invasive cardiology, Kabul, Afghanistan

A 69-year-old male patient was admitted to our hospital with the symptoms of effort angina for last 3 months. He was ex-smoker and non diabetic, and reported previous treatment for high blood pressure and dyslipidemia, he had underwent coronary angioplasty and stenting to left main to LAD and to RCA in another center abroad 11 months back.

An electrocardiogram at admittance showed the sinus rhythm with no specific ST segment and T-wave changes. Physical examination showed arterial blood pressure 124/65 mmHg and a pulse rate of 63bpm. Transthoracic echocardiography revealed no regional wall motion abnormality with left ventricular ejection fraction 60% and grade I LV diastolic dysfunction. In view of his exertional anginal symptoms despite optimal medical anti-anginal treatment, he was planned for check coronary angiogram. His coronary angiogram revealed patent stent (left main to left anterior descending coronary artery, patent RCA stent), whereas a severely ostial disease of non dominant but large size circumflex coronary artery (CX), and the right coronary artery (RCA) were without significant disease.

Left coronary system was engaged with JL 4–7 Fr guiding catheter and coronary wire Fielder FC was advanced through the ostial LCX lesion to distal segment. Several sequential balloon predilatations (low profile balloon 1.1 x 10mm at 18atmosphere and Sprinter Legend 2.0 x 10 mm at 14 atmosphere) in the Left main to ostial LCX done with TIMI-III flow, while trying to cross the stent 2.5 x 12mm DES through the previously deployed left main to LAD stent with a sharp angle between left main and LCX and tortuous proximal segment of LCX, stent dislodged in the bifurcation of LM to LCX.

The patient compained on intense chest pain and suddenly developed severe bradycardia (30 beats per minute) with a drop in blood pressure to 60/40 mmHg. The flow in LCX was disturbed but there was TIMI-III flow in LAD, As we could not pull back the stent which was stucked with the previously left main stent and in sharp angle of ostial LCX, and on the other hand we lose the guide wire in the target vessel, we re-wired the lesion and decided to crush the unexpanded dislodged stent against the wall in the distal left main and ostio-proximal LCX with 2 x 10mm balloon inflating it up to 16atm, This resulted in a rapid blood flow restoration in LCX (TIMI-III), thought there was some plaque shifting in the ostial LAD then crushed with a stent 2.5 x 12mm (DES) at 14atm, with a good TIMI-III flow, another coronary wire BMW was advanced in left main to LAD and final kissing balloon done with 3.5 x 13mm non complaint balloon in left main to LAD and 2x 10mm balloon in LCX at 12atm.

Meanwhile application of atropine and normal saline infusion resulted in hemodynamic stabilization of the patient. The final angiographic result was optimal with uneventful later in hospital course. The patient was discharged on day 3rd.

A follow-up during the next three months showed good patient health with the absence of ischemic symptoms. Coronary angiography was performed after three months which showed patent all stents.

Unusual Case of ST Elevation Myocardial Infarction and Ventricular Tachycardia in A Patient with Kawasaki Disease

Shabib El Azmi

Background:

Kawasaki disease (KD) an acute self-limiting vasculitis of small - medium sized vessels. It is usually associated with coronary artery aneurysm formation and thrombotic occlusion. Few cases of ST elevation MI (STEMI) and ventricular tachycardia (VT) were reported in patients with KD.

Case: An 18 y.o male with hx of KD, who lost follow up for > 10 years, presented with out of hospital cardiac arrest while playing volleyball. Initial ECG showed polymorphic VT, and with successful CPR and DC shocks, ROSC was achieved after 15 mins. Repeated ECG showed anterolateral wall STEMI with initial trop of 700 pg/ml. Renal function and inflammatory markers were normal. Echocardiography showed EF 25 % with severe global hypokinesis of LV walls.

Decision-making: Patient was taken to cath lab emergently and amiodarone drip was started. LHC showed chronic total occlusion of LAD with right to left collaterals and normal LCx and RCA. PCI to LAD was attempted but unsuccessful and the decision was to treat medically. Cardiac CTA showed calcified plaques of proximal – mid LAD with thread like lumen of distal LAD. Thoracic and abdominal CTA showed no evidence of vasculitis. MRI brain with normal. Both autoimmune workup and thrombophilia work up were -ve. ICD was placed for secondary prevention. Echocardiography was repeated three days and showed EF of 50 % with akinetic apical inferior segment.

Conclusion: Kawasaki disease can present with STEMI and VT without any obvious thrombotic occlusion or active vasculitis. This patient was challenging as his LAD was not suitable for stents or grafts!

Section (5): Review article

Should Aspirin Be Used for Primary Prevention?

Tarek El Zawawy

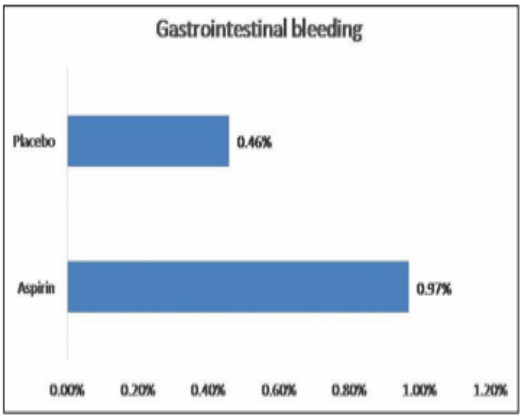
Aspirin has been the cornerstone of the treatment in secondary prophylaxis of cardiovascular events (myocardial infarction, stroke, TIA). Whether to use aspirin for primary prophylaxis of CVD has always been a debatable issue.

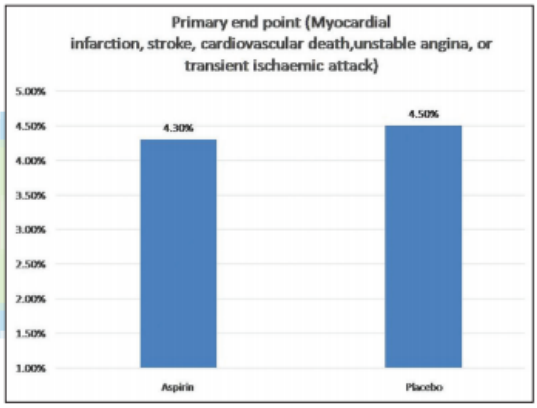
Three landmark primary prevention trials on aspirin were published in 2018

1-Use of Aspirin to Reduce Risk of Initial Vascular Events in Patients at Moderate Risk of Cardiovascular Disease (ARRIVE) (Lancet 2018;392:1036-46.)

This clinical trial randomized over 12,000 patients at moderate

risk of coronary heart disease to either 100 mg of coated aspirin daily or to a placebo





gastrointestinal bleeding in the ARRIVE trial

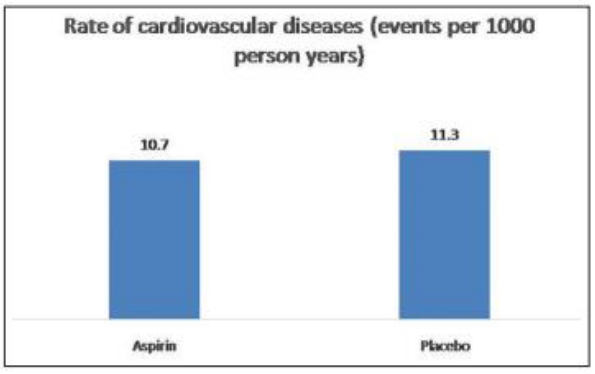
Incidence of primary end point in the ARRIVE trial

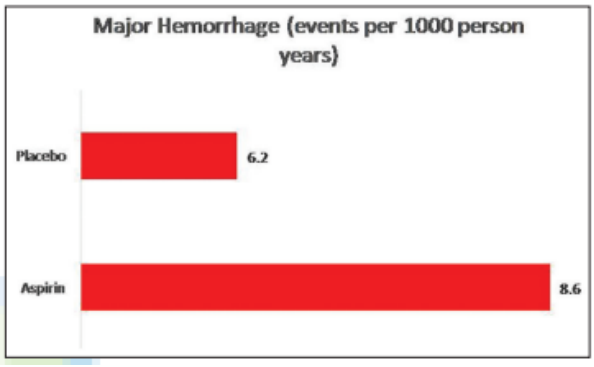
CONCLUSIONS:

Among patients at moderate risk of coronary heart disease, the use of aspirin was not beneficial as a primary prevention strategy. Aspirin was not associated with a reduction in adverse cardiovascular events. Bleeding events were low and were similar between the groups. however, GI bleeding was more in the aspirin group.

2-Effect of Aspirin on Cardiovascular Events and Bleeding in the Healthy Elderly (ASPREE)
(N Engl J Med 2018;379:1509-18.)

The study included 19,114 community-dwelling people in Australia and the United States who were 70 years of age or older and free at baseline of cardiovascular disease





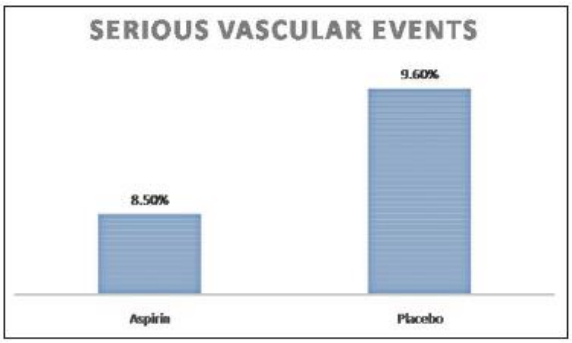
Cardiovascular events in ASPREE trial
Major hemorrhage in ASPREE trial.

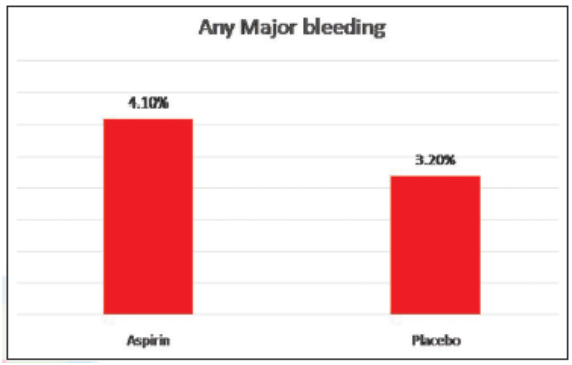
CONCLUSIONS:

Among healthy elderly patients, low-dose aspirin therapy was not beneficial. Compared with placebo, aspirin did not improve disability-free survival or reduce major adverse cardiovascular events at a median of 4.7 years. However, it was associated with a statistically significant increase in major bleeding, which was attributed to excess intracranial and upper GI bleeding.

3-Effects of Aspirin for Primary Prevention in Persons with Diabetes Mellitus (ASCEND)
(N Engl J Med 2018;379:1529-39.)

1500 Diabetic patients (any type), ≥40 years of age, without known CVD





Serious vascular events in ASCEND trial Major hemorrhage in ASCEND trial

CONCLUSIONS:

Among diabetic patients with no known CVD, aspirin was associated with a 12% relative reduction in major adverse cardiovascular events compared with placebo. However, aspirin was associated with a 29% relative increase in major bleeding events compared with placebo. The increase in bleeding was mainly due to GI hemorrhage Therefore, the evidence from this trial suggests that beneficial use of aspirin in primary prophylaxis for diabetic patients should be weighed against the significantly increased risk of bleeding

Based on the ASPREE, ARRIVE, and ASCEND trials, In March 2019, the American College of Cardiology (ACC) and the American Heart Association (AHA) released new guidelines that suggest that most adults without a history of heart disease should not take low-dose daily aspirin to prevent a first heart attack or stroke

ACC/AHA Primary Prevention of ASCVD (GUIDELINES 2019)

Low-dose aspirin (75-100 mg po /day) for primary prevention of ASCVD:

Consider use if 40-70 years old with elevated ASCVD risk and no increased risk of bleeding (LOE A, COR IIb)

Avoid use if age ≥70 years (LOE B-R, COR III/harm)

Avoid use at any age if increased risk of bleeding (LOE C-LD; COR III/harm).