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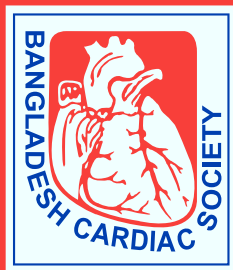
# BANGLADESH HEART JOURNAL

Special Supplement Issue

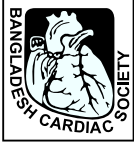
December 2019

Abstracts of BanglaCardio 2019

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# BANGLADESH HEART JOURNAL

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December 2019

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## ***From Editor's Desk***

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Bangladesh Heart Journal, publishes a supplement outside its regular issues on the occasion of BanglaCardio 2019.

BanglaCardio is an International cardiovascular conference organized by Bangladesh Cardiac Society in every two years. This three-day Conference will have 39 scientific sessions on Clinical & Preventive Cardiology, Echocardiography and Cardiovascular Imaging, Cardiac and Vascular Interventions, Arrhythmia, Pediatric and congenial Heart Diseases, and Cardiovascular Surgery. Besides these there will be CD and clinical case presentations, moderated abstract sessions and poster presentations covering a wide spectrum of topics on cardiovascular diseases. There will be direct Telecasted Skype sessions with American College of Cardiology and Joint Sessions with Asian Pacific Society of Cardiology (APSC) and European Society of Cardiology (ESC).

We hope that this conference will be a congregation of the eminent cardiologists and cardiac surgeons from home and abroad and will be an unique opportunity of strengthening our professional bonding and social fraternity through exchange of ideas and experiences on recent advances in the field of Cardiology.

The academic presentations and write-ups submitted to and selected for the conference have been included in this supplement as abstracts. All levels of cardiologists from young to the most experienced, from home and abroad, have participated in this academic bonanza. Hopefully, the budding professionals will be encouraged by getting their presentation published.

## **SCENARIO OF CARDIOVASCULAR DISEASES IN BANGLADESH**

**A K M Mohibullah**

Bangladesh through sustained socio-economic development has recently been elevated to lower middle income countries. There is much improvement in national health indicators particularly in infant and maternal mortality, nutritional states, safe drinking water and sanitation. People's life style has been changed. There is increase in tobacco consumption and saturated fat intake, decrease in physical activities and increase in bodyweight. In recent years there is epidemiological transition of disease burden - shifting from communicable to non-communicable diseases (NCDs). In 1986 communicable disease represented 52% of all deaths whereas in 2018 non communicable diseases including cardiovascular diseases represents 67% of total deaths with much decrease of the communicable diseases.

Cardiovascular Diseases (CVD) are increasing in Bangladesh claiming large member of lives. It is responsible for 30% of the total deaths. More than 256000 die every year due to cardiac diseases. All types of cardiovascular diseases are prevalent in the country. Socioeconomic and environmental improvement, increase in people's awareness and effective prevention program the burden of Rheumatic fever and rheumatic heart diseases has declined. On the other hand, Coronary artery diseases and hypertension are becoming more prevalent and getting epidemic proportion. Besides conventional risk factors, genetic makeup and some emerging environmental factors may underlie this increase in CAD. We are lacking of nationwide epidemiological data regarding the scenario of CVD in the country, however by analyzing the available data and meta-analysis of different studies, it can be estimated that the prevalence of Hypertension as 15-24%, Coronary Artery Disease as 4-6% and Rheumatic Fever and Rheumatic Heart disease as <0.1%, Congenital Heart Disease as 25-30 per 1000 live birth and stroke as 0.3-1%. Data on Heart Failure, arrhythmias, cardiomyopathies and peripheral vascular diseases still needs to be evaluated.

Towards the end of the last century, the world has seen tremendous advancements in the field of cardiovascular care particularly in interventional cardiology and cardiac surgery. In Bangladesh Cardiac care facilities has started taking off in late seventies of last century with the establishment of National Institute of Cardiovascular Diseases (NICVD) at Dhaka in 1978 and cardiology units in eight - the then Govt. Medical College Hospitals in different region of the country. Besides rendering cardiac care facilities to the patients, the institute has taken the programme to develop cardiologists, cardiac surgeons and technical persons to cater the need of manpower in this field. Presently we have more than 1200 cardiologists and Cardiac surgeons in the country but not enough for our 170 million people.

Over the past several years lot of advancement have taken place in cardiac care facilities in the country. Most of the cardiac investigations and treatment, invasive and non-invasive procedures, cardiac surgeries are now being done in the country. Both government and non-government organizations are taking part in this endeavor. Cardiac care facilities including interventional procedures are now available in almost 65 institutes and hospitals and cardiac surgery is being done in 26 Hospitals of the country with more than 70 cardiac cath labs and 52 cardiac operation theatres. Total interventional procedures done in 2018 were more than 76951 with 48947 CAG and 18880 PCIs. In this year 10253 cardiac surgeries were performed with 5698 CABG in the country.

Cardiologists and cardiac surgeons of the country are keeping distinct contribution to the medical care of the country and have taken the cardiovascular care services to an international standard. Even then the existing facilities are not adequate for increasing cardiac patients. The investigations and treatment

are costly. We are still lacking of epidemiological and clinical data on prevalence of cardiovascular diseases in the country. There is no national registry covering the growing number of interventional procedure and surgeries. National guidelines for management of different CVD are not adequate. Preventive services are largely overlooked. Medicines and devices used in cardiovascular interventions are expensive and beyond the reach of the majority of patients. Emergency cardiac care are not well organized and easily available. There is shortage of trained manpower and skilled personnel are not being utilized properly.

Bangladesh has many health problems. Majority of our people are poor and ignorant to diseases. Though there is much improvement in national health indicators but yet not satisfactory. Moreover, economic impact due to cardiovascular diseases still remain largely unrecognized. Unawareness regarding the magnitude of the problem may likely put serious implications on our disease burden and health care services in near future.

It took many years to reach this stage. We have to overcome all these odds and shortcomings to achieve adequacy in this field. To keep pace with modern cardiology, it is essential to improve the present situation and to introduce newer procedures and facilities.

Government has to come forward to extend and improve the cardiac care facilities in the country, particularly in Government Hospitals and to bring down the cost of treatment to the reach of our common people. Above all it requires coordinated action from the health care professionals, policy makers and individuals at all level by advocating Heart Healthy policies towards reducing the cardiovascular disease burden in the country.

**BC - 002**

## **APSC CONSENSUS STATEMENTS FOR NOAC AND P2Y12 ANTAGONIST USAGE IN ASIA**

**Tan Wei Chieh Jack**

These Asia-Pacific Society of Cardiology (APSC) consensus recommendations and algorithms were developed to provide guidance for healthcare professionals and cardiologists in Asia-Pacific on a variety of contemporary topics that need clarification and refinements from ESC and ACC/AHA guidelines on topics peculiar to Asians.

Key opinion thought leaders across APSC countries were involved in these consensuses that span usage of high sensitivity troponin T use, P2Y12 agents, NOACs, CAD therapy pathway, high bleeding risk definition, mitral clip, FH with a PCSK9 therapy algorithm and DM consensus for cardiologists.

This talk will highlight the NOAC and P2Y12 consensus recommendations. The consensus will be submitted for publication and available as open access in Circulation Journal.

The NOAC consensus document was developed by the Asian Pacific Society of Cardiology to guide physicians on contemporary issues faced in the management of atrial fibrillation (AF). Appropriate use of non-vitamin K oral anticoagulant (NOAC) in Asian AF patients can significantly minimize thromboembolism and reduce the risk of bleeding events. The gender neutral CHA2DS2-VA score can be used instead of the CHA2DS2-VASc score. Anticoagulation is recommended in AF patients with CHA2DS2-VA score  $\geq 1$  and use of NOAC is recommended over warfarin in NOAC-eligible patients. Dose of NOAC used should be based on evidence from clinical trials in accordance with approved dose-reduction criteria; inappropriate dose reduction should be avoided. Unnecessary prolonged

interruption of anticoagulation pre- or post-surgical procedures, or when transitioning between NOAC and warfarin, should be avoided. Up to 1 month of triple antithrombotic therapy (NOAC + P2Y12 inhibitor + aspirin) is acceptable in AF patients who have undergone percutaneous coronary intervention, followed by up to 12 months of dual therapy (NOAC + P2Y12 inhibitor); after which patients can be maintained on NOAC monotherapy. Institution-specific bleeding management plans that take into consideration the availability of reversal agents and other coagulation products should be in place. Anticoagulation should be restarted after the cause of bleed has been corrected. If the cause of bleed is not found, an interdisciplinary consensus should be reached for an individualized anticoagulation strategy. Consensus recommendations were formed based on the available clinical evidence and the collective experience of the Expert Committee members. Each recommendation was assigned a strength of recommendation based on a three-point scale (i.e., strong recommendation, SR; intermediate recommendation, IR; not recommended, NR) and a level of evidence based on an adaptation of the Levels of Evidence by the Oxford Centre for Evidence-based Medicine.

**BC - 003**

## **CURRENT APPROACH & OPTIMAL MEDICAL THERAPY FOR CHRONIC CORONARY SYNDROME**

**David KL Quek**

Stable Ischemic Heart Disease or Stable Coronary Artery Disease has now been renamed Chronic Coronary Syndrome (CCS) by the European Society of Cardiology to underline the spectrum of angina symptoms and variation of presentation of myocardial ischemia over time. Angina is not benign—some 2-3% of patients die annually. Disruptive and incapacitating Quality of life measures are also common. While angina pectoris may be stable at initial presentation, there is variable risk of deterioration into unstable acute coronary syndromes over time. Therefore, accurate diagnostic approaches and tests are useful to risk stratify those at highest risk of MACE, and death.

The most recent ECS-EAS Guideline on CCS appears to endorse very early use of CT-coronary angiography (CTA) to rule out coronary pathology. But this approach would exclude non-atherosclerotic causes of angina or myocardial ischemia (microvascular, spasm, small vessel disease, hypertrophic diastolic dysfunction, myocardial bridging, etc). Moreover, CTA is not readily available outside of Europe, especially in Asia. This aggressive approach to early revascularisation particularly PCI, is likely to result in excess interventions that have now been increasingly shown to be wasteful and unnecessary. There are also the often-hidden adverse outcomes of invasive testing and revascularisation, e.g. unexpected sudden deaths, myocardial infarctions, heart failure, kidney injury, strokes etc. Many studies have shown that where the ischemia is less than 10% of the myocardium in jeopardy, then aggressive revascularisation approaches may incur greater harm than benefit (Hachamovitch R, et al, 2011)

The earlier COURAGE data (2007, 2013) and ORBITA (2018) trials have shown that PCI in stable CAD are not superior to Optimal Medical Therapy (OMT) in reducing death or major adverse CV events. The most recently announced results of the ISCHEMIA trial at the AHA meeting (2019), further reinforced the non-inferiority of OMT vs PCI, with no increased hazard of death or MACE. One troubling finding is that functional stress testing to screen for myocardial ischemia was not been a good predictor of outcome for either single or multivessel CAD, or MACE. Even CTA-confirmed coronary disease was not a good differentiator for outcomes for PCI or OMT. This complicates the diagnostic pathway for physicians to adopt when trying to risk-stratify patients with CCS.

28% of patients in the OMT conservative arm got cardiac catheterisation, while some 23% got revascularisation by 4 years in the trial. Those who got earlier PCI tended to have nonsignificant greater freedom from angina. Primary outcomes for composite cardiac events with key MI and CV deaths showed a cross-over at 2 years, with an absolute 1.9% more events in the 1st 6 months but 2.2% fewer at 4 years, for PCI vs. OMT cohorts respectively.

Therefore, the approach towards more prudent PCI may be more cost-effective than chasing coronary artery stenoses and stenting them. A more cost-effective approach utilising more comprehensive anti-anginal medications based on presenting symptoms, comorbidities, and risk factors may be best, without the fear of incurring higher CVD risk. The Diamond approach (Ferrari R, et al, Nature Rev Cardiology 2018) matching individual patient profiles to carefully selected combination therapies may offer the best strategy at alleviating angina episodes, improving quality of life as well as helping to reduce or avoid MACE.

Importantly, disease modifying agents such as LDL-reduction, goal-directed control of diabetes and hypertension to evidence-proven targets, must underpin these measures. Notably more aggressive goals at LDL, BP lowering must be actively achieved by physicians. The role of other antianginals (e.g. trimetazidine, ranolazine, ivabradine, nicorandil) besides nitrates, beta-blockers or calcium channel blockers can be used more decisively and concomitantly to reduce the burden of angina in the community.

**BC - 004**

## **HEART FAILURE - MECHANISMS AND THE JAPANESE GUIDELINES**

**Issei Komuro**

Prolonged cardiac hypertrophy causes heart failure, but its mechanisms are largely unknown. Recently we have reported that pressure overload first induced cardiac hypertrophy without cardiac dysfunction by promoting vascular growth in the heart. Sustained pressure overload, however, induced an accumulation of p53 that inhibited cardiac angiogenesis and then systolic function. To know how pressure overload induces expressions of p53, we examined whether pressure overload induces DNA damage in cardiomyocytes. Comet assay revealed that pressure overload on murine hearts induced single strand breaks in cardiomyocytes and caused heart failure. We have recently found that there were heart failure patients with DNA damage, who showed poor prognosis. These results suggest that DNA damage is a cause of heart failure and that we can predict the patients' prognosis by examining DNA damage. We have recently made new guideline of heart failure and I will introduce it.

**BC - 005**

## **DOES LOWERING OF TRIGLYCERIDE REDUCES CARDIOVASCULAR RISK ?**

**Abdullah Al Shafi Majumder**

High triglyceride was taken as a risk for cardiovascular diseases long time back. As the trials with LDL-C demonstrated robust evidence for causal relationship with the atherosclerotic cardiovascular diseases (ASCVD) and lowering of LDL-C is found to reduce the ASCVD, the role of triglyceride got less attention for a long time. HDL drew much attention for a long time until recently and it has been labelled as "surrogate marker" for ASCVD rather than a risk factor. A renewed interest on the role of TG led to a number of trials that concluded that it has got relationship with ASCVD.

As there remains residual risk after maximal lowering of LDL, it is logical to think that risk factor other than the LDL is responsible for this. So it was recommended to target non-HDL cholesterol that includes triglyceride. Last year result of REDUCE IT trial is published that show that reducing TG by highly purified eicosapentaenoic acid led to the reduction of the TG and improve the cardiovascular outcome. Improvement of cardiovascular outcome was more than expected at the extent of reduction of TG raising some points.

In 2018 ACC/AHA guideline on cholesterol mentioned that high TG level is a concern for atherosclerotic cardiovascular diseases (ASCVD), and recommends statin as the treatment. Even after publication of REDUCE IT trial, the recently published ESC/EAS guideline on dyslipidaemia recommend statin for high TG and states that the use of IPE in a dose of 2 g twice daily should be considered in combination with a statin in high-risk (or above) patients with TG levels 135-499 mg/dL, despite statin treatment.

Very recently the National Lipid Association in its scientific statement states that epidemiological and Mendelian randomization studies have demonstrated that fasting or non-fasting TG elevation is associated with increased ASCVD risk. Recommendation from NLA is: "For patients 45 years of age or older with clinical ASCVD, or 50 years of age or older with diabetes mellitus requiring medication and  $\geq$  1 additional risk factor, with fasting TG 135-499 mg/dL on high-intensity or maximally tolerated statin, with or without ezetimibe, treatment with IPE is recommended for ASCVD risk reduction. ( Class I)".

Thus steps to lower TG for reduction of ASCVD is a scientifically evident and to be included in our daily practice of lipid management.

**BC - 006**

## **LM PCI- CASE BASED PRESENTATION**

### **Md. Mamunur Rashid**

Left main PCI is always challenging and difficult issue for an interventional cardiologist. LM disease is defined as 50% or more lumen narrowing and accounts for 5-7% of all patients who are undergoing coronary angiogram. LM ostial and body disease accounts for 23.6% and distal or bifurcation stenosis accounts around 73.3% of LM diseases. For ostial and shaft lesion, engagement and positioning of guide catheter is very crucial for achieving proper guide support and to avoid trauma to LM ostium by deep throating.

PCI to LM distal or bifurcation lesion is challenging due to chance of plaque shifting, closure of side branch, chance of restenosis and stent thrombosis. Imaging guidance (IVUS) is important for successful left main PCI, for assessing lesion significance, sizing of stent, stent expansion or apposition.

Good lesion preparation is critically important for successful left main PCI, for fibrous or calcific lesion high pressure NC balloon, cutting balloon, rotational atherectomy may be needed. Haemodynamic support: IABP, impella, LVAD remain clinically useful in selected high risk individuals.

Provisional stenting or single stent strategy would be appropriate and adequate in most of the LM bifurcations (80%). Perform two stent strategies whenever required. Final kissing balloon inflation is mandatory in case of double-stent strategy. Optimal anti-platelet therapy is key factor for short and long term success of stenting.



## **THREE-YEAR OUTCOMES OF DK CRUSH-V TRIAL COMPARING DK CRUSH WITH PROVISIONAL STENTING FOR LEFT MAIN BIFURCATION LESIONS**

**Shao-Liang Chen**

**Objectives:** The present study aimed to investigate the difference in target lesion failure (TLF) at 3 years after double-kissing (DK) crush versus provisional stenting (PS) for unprotected left main distal bifurcation lesions (UPLMb).

**Background:** The multicenter and randomized DKCRUSH-V study showed fewer 1-year TLF after DK crush for UPLMb compared with PS. Here, we report the 3-year clinical outcome of the DKCRUSH-V study.

**Methods:** A total of 482 patients with UPLMb who were randomly assigned to either the DK crush (DK group) or PS group in the DKCRUSH-V study were followed for 3 year. The primary endpoint was the occurrence of a TLF at 3 years. Stent thrombosis (ST) was the safety endpoint. Patients were classified by lesion's complexity and NERS II or SYNTAX score.

**Results:** At 3 years, TLF occurred in 41 (16.9%) patients in the PS group and in 20 (8.3%) patients in the DK group ( $p=0.005$ ), mainly driven by increased target-vessel myocardial infarction (5.8% vs. 1.7%,  $p=0.017$ ) and target lesion failure (10.3% vs. 5.0%,  $p=0.029$ ). Definite or probable ST rate at 3 years was 4.1% in the PS group and 0.4% in the DK group ( $p=0.006$ ). Notably, DK crush was associated with a significant reduction in both primary and secondary endpoints for patients with complex lesions or at high-risk.

**Conclusions:** Provisional stenting for UPLMb was associated with significantly increased rates of TLF and ST over 3 years follow-up. Further randomized study is warranted to confirm the benefits of DK crush stenting for complex UPLMb. (Comparison of double kissing crush versus provisional stenting for unprotected distal left main bifurcation lesions: results from a multicenter, randomized, prospective study: ChiCTR-TRC-11001213).

## TREATING ANGINA AT THE CARDIAC CELL LEVEL

**Mario Marzilli**

Ischemic heart disease continues to cause high morbidity and mortality. Its prevalence is expected to increase due to population aging, and its prevention is a major goal of health policies. The risk of developing ischemic heart disease is related to a complex interplay between genetic, environmental, and lifestyle factors. Evaluation and management of ischemic heart disease has evolved significantly over the past decade. In particular, several clinical trials have documented the benefits of revascularization in patients with acute ischemic syndromes as well as the efficacy of medical therapy, including lifestyle modification in patients with stable coronary disease. Chronic stable angina pectoris is the most prevalent symptomatic manifestation of ischaemic heart disease, and its management is a priority. Current clinical guidelines recommend antianginal therapy to control symptoms, before considering coronary artery revascularization. The new ESC guidelines 2019 for the diagnosis & management of chronic coronary syndromes comes with some new points. The modern face of angina patient looks different. We can see high diversity of symptoms and only 10-15% of patients are presenting with typical angina. Many patients do not feel "pain". So, drug therapy remains a cornerstone in the management of angina patients. Multiple causes of angina is recognized. In many times, multi-target approach is encouraged even at initiation stage. As there is no universal definition of an optimal treatment with CCS, drug therapies must be adapted to each patient's characteristics and preferences. That means, personalized treatment approach is amplified. While multi-target approach is required, complete treatment approach should combine hemodynamic drug along with one which can target cardiac cell level – a metabolic drug. In that case, the class of recommendation of trimetazidine has been rightly upgraded to IIa from IIb. Trimetazidine is known to target deranged cellular energetics, particularly in ischaemic myocardial tissue. Trimetazidine appears to have a haemodynamically neutral side effect profile. Trimetazidine added to beta-blockade improved effort-induced myocardial ischaemia as reviewed by the European Medicines Agency. A meta-analysis of 13 studies consisting of 1628 patients showed that treatment with trimetazidine on top of other antianginal drugs was associated with a smaller weekly mean number of angina attacks, lower weekly nitroglycerin use, longer time to 1 mm ST-segment depression, higher total work, and longer exercise duration at peak exercise than treatment with the other antianginal drugs for stable angina pectoris. These results support the use of trimetazidine as a second-line drug in patients with CCS whose symptoms are not adequately controlled by, or who are intolerant to, other medicines for angina pectoris. The new guideline also indicated that trimetazidine should be considered as a second-line treatment to reduce angina frequency and improve exercise tolerance in subjects who cannot tolerate, have contraindications to, or whose symptoms are not adequately controlled by beta-blockers, CCBs, and long-acting nitrates. In subjects with baseline low heart rate and low BP, trimetazidine may be considered as a first-line drug to reduce angina frequency and improve exercise tolerance. In selected patients, the combination of a beta-blocker or a CCB with second-line drugs (trimetazidine) may be considered for first-line treatment according to heart rate, BP, and tolerance. Why such recommendation is appropriate for trimetazidine? Because trimetazidine increases energy in ischemic heart by +33% through its purely metabolic mode of action without any influence on hemodynamic parameters (HR, BP). Trimetazidine has proven antianginal and antiischaemic efficacy in many clinical trials. Trimetazidine has greater antianginal efficacy combined with  $\beta$ -blockers and better antianginal efficacy than long-acting nitrates. Trimetazidine provides consistent symptom relief in all patients with stable angina. The sooner trimetazidine is initiated the more benefits were observed. But all "trimetazidines" are not created equal! When patients taking generic trimetazidine were switched to original one (Vastarel MR), almost double reduction in angina attacks were found. Finally there is a need for rising an angina awareness among doctors and patients to achieve optimum treatment goal.

**BC - 009**

## **ST ELEVATION MI- PHARMACO-INVASIVE THERAPY**

**M. Afzalur Rahman**

Primary percutaneous coronary intervention (PCI) is the preferred reperfusion method in patients with ST elevation myocardial infarction (STEMI), if it is performed by skilled operators in a timely fashion. However, this strategy has shown to be of limited access due to lack of adequate PCI capable hospital or delay in the first medical contact-to balloon time for logistic reasons in many parts of the world. This delay is more prominent in less advanced countries where emergency services and public awareness and education programs are not well established. Each minute's delay contributes to myocardial damage. It has been shown that the 1-year mortality increases by 7.5% for each 30-minute delay in treatment. Realizing these limitations of primary PCI pharmaco-invasive strategy was developed. In fact this strategy might be a better approach when the delay of primary PCI is anticipated. Pharmaco-invasive strategy has been endorsed by both the European Society of Cardiology and American College of Cardiology STEMI guidelines.

**BC - 010**

## **PRIMARY PCI - SCOPE AND OUR LIMITATIONS**

**Syed Ali Ahsan**

Acute coronary syndrome is a leading cause of morbidity and mortality worldwide, and its incidence is projected to increase, especially in the developing world. By 2025, cardiovascular mortality on a worldwide scale will likely surpass that of every major disease group including infection, cancer and trauma. Acute coronary syndrome refers to a spectrum of conditions compatible with acute myocardial ischemia and/or infarction that are usually due to an abrupt reduction in coronary blood flow. The spectrum of clinical presentations including unstable angina (UA), Non-ST-segment elevation myocardial infarction (NSTEMI) and ST-segment elevation myocardial infarction (STEMI), is referred to as acute coronary syndrome. STEMI represents the most lethal form of ACS, in which a completely occlusive thrombus typically results in total cessation of coronary blood flow, manifested electrically as elevation of the ST segment on the ECG.

Accurate diagnosis of STEMI is of paramount importance because it mandates immediate consideration of reperfusion therapy. When a patient arrives at a PCI-capable facility, primary PCI is the preferred mode of reperfusion therapy. However, many health care facilities do not have ready access to timely PCI. Fibrinolytic therapy also confers well-established benefits in patients with STEMI, during the initial 12 hours after the onset of symptoms. If the delay from first medical contact to performing primary PCI is anticipated to exceed 120 minutes, administration of a fibrinolytic is indicated for the treatment of STEMI within 12 hours of onset in the absence of contraindications. ESC guidelines of STEMI 2017, recommend immediate transfer of patients to the PCI centre after thrombolysis. In cases of failed thrombolysis, immediate angiography and rescue PCI is indicated. Even in cases of successful thrombolysis, a strategy of routine early angiography is recommended.

In developing south Asian countries like Bangladesh primary PCI cannot be offered round the clock, due to unavailability of invasive cathlabs, due to delay in transfer, financial issues, lack of awareness. At this situation pharmacoinvasive strategy consists of the use of intravenous thrombolytic therapy in a primary care center followed by immediate transfer to a tertiary hospital, where early coronary angiography and percutaneous coronary angioplasty should be performed within 3 to 24 hours, even in cases of successful reperfusion.

## **ROLE OF ANTI-THROMBOTICS IN CARDIOLOGY**

**Sundeep Mishra**

Antithrombotic drugs are an established modality in prevention and treatment of both arterial and venous thrombosis; atherosclerosis, acute coronary syndromes (ACS), those receiving coronary stents, atrial fibrillation, deep venous thrombosis and pulmonary thrombo-embolism. Thrombus formation anywhere in the cardiovascular tree (arterial or venous) requires both the activation of the coagulation cascade and the generation of thrombin although in arterial thrombosis thrombin generation predominates whereas in venous system coagulation cascade is more relevant. Both these pathways are regulated through an intricate positive and negative feedback mechanism thus making it an interaction of multiple synergetic pathways. Of those several pathways are known; coagulation (both intrinsic and extrinsic), thromboxane, P2Y12, and thrombin are well recognized. Modern anti-thrombotic treatment involves choosing the appropriate combination of pathways to target specific scenarios on basis of both rationale and experience; only logic may not be useful for e.g. studies investigating the addition of an anticoagulant to dual antiplatelet treatment (DAPT) in patients with ACS showed an unfavorable risk/benefit profile due to an increased risk of bleeding. On the other hand addition of anticoagulation to a single antiplatelet drug (particularly clopidogrel) was found beneficial in those with a combination of risk of both arterial and venous thrombosis such as patients with AF undergoing stent implantation. However, in patients only at high risk of arterial thrombosis (ACS / AMI, stent implantation, in transcatheter aortic valve replacement {TAVR}) would benefit from DAPT; aspirin with a P2Y12 inhibitor chosen according to ischemic versus bleeding risk of the patient. Regarding venous thrombosis, warfarin / acitrom has remained mainstay in past but they were limited by a relatively narrow therapeutic window and consequently need for frequent monitoring. However discovery of direct anti-coagulants (DOACs) has opened up new avenues and made the anti-coagulant therapy more effective, more consistent but even more importantly safer.

## **CONTROL OF BLOOD LIPIDS IN EUROPE AND BANGLADESH**

**Ian M Graham**

The 2019 ESC/EAS Guidelines for the management of dyslipidaemias define more rigorous goals for LDL cholesterol compared with the 2016 Guidelines:

Low risk : 3.0 mmol/L (116mg/dL)  
Moderate risk : 2.6 mmol/L (100 mg/dL)  
High risk : 1.8 mmol/L (70 mg/dL)  
Very high risk : 1.4 mmol/L (55 mg/dL)

Audits of lipid control such as SURF indicate that, internationally, only 30% of high-risk subjects achieve an LDL cholesterol of 1.8 mmol/L (70 mg/dL). Management of dyslipidaemias involves balancing the ideal with what is practicable.

While LDL cholesterol levels may currently be relatively low in Bangladesh, they appear to be higher in urban areas, and may rise further with increasing urbanisation. They are also higher in hypertensive

subjects. The question arises as to whether European guidelines are realistic, practically and economically, in Bangladesh.

SURF (Survey of Risk Factors) is a European Society of Cardiology clinical audit of risk factor recording and control in subjects with proven coronary heart disease that can be undertaken in two minutes per patient. In general, smoking and hypertension control remain static, lipid control improves modestly and lack of exercise and overweight get worse, with a consequent increase in diabetes. The results of Phase I will be presented, with an invitation to Bangladesh to participate in the new Phase II.

**BC - 013**

## **ATRIAL FIBRILLATION: EPIDEMIOLOGY AND ANTICOAGULATION**

**Ong Hean Yee**

Atrial Fibrillation is one of the most common arrhythmia in the general population; it is not an innocuous disorder and can lead to serious harm and disability. How many are we seeing and more importantly how many are we not seeing? We know that anticoagulation prevents strokes but it comes at a price and how do we balance these conflicting risks.

Management of Heart Failure with Preserved Ejection Fraction

Heart Failure was never defined by her Ejection Fraction. For reasons mainly related to the difficulty in quantifying diastolic function, most modern studies were performed in Heart Failure with Reduced Ejection Fraction (HFrEF). There is a paucity of data on how to manage Heart Failure with Preserved Ejection Fraction (HFpEF) but thankfully this is now changing rapidly.

**BC - 014**

## **OUT-PATIENT DEPARTMENT BASED MANAGEMENT OF CHRONIC HEART FAILURE PATIENTS THROUGH HEART FAILURE CLINIC-OUR EXPERIENCES.**

**N A M Momenuzzaman, Tunaggina Afrin khan, Samsun Nahar, Fatema Begum, Kaiser N Khan, Reyan Anis.**

Heart failure (HF) represents a major public health problem despite optimal medical therapy, morbidity and mortality remain high. Recent studies have shown that the HF treatment, particularly, new pharmacological agents, implantation of intra-cardiac defibrillators (ICD), cardiac resynchronization therapy (CRT) and other surgical procedures, has markedly improved clinical outcomes of patients with HF including increased life expectancy and improved quality of life. We intended to provide comprehensive care to heart failure patients at an out-patient care based heart failure clinic in United Hospital Limited. It comprises of 528 patients from May 2016 to October 2019 among whom 48 patients died. The remaining patients (480) were taken for analysis of improvement of clinical status in both subjective and objective perspective. Among the patients, the average age was 58.46 years with 79.92% males. Coronary artery disease was the dominant cause of heart failure. Most patients received guideline -directed medical therapy with beta blocker being prescribed to highest population and they also treated with ACEi/ARB/ARNi and diuretics. Along with medical therapy, 3.22% patient received ICD and 0.95% had CRTD. The one year all-cause mortality was 9.09%. Out of total death 27 (56.25%) patients died due to sudden cardiac death, 12 (25%) due to worsening of heart failure. This represents the single center data of HF patients. So heart failure requires an integrated approach to their care through a heart failure clinic to meet their needs from diagnosis to end of life.

**BC - 015**

## **MANAGEMENT OF HFPEF : WHAT WE LEARNT FROM THE PARAGON HF TRIAL ?**

**Abdullah Al Shafi Majumder**

Prevalence of heart failure is around 20% all over the world i.e. one in five of the population is suffering from heart failure. About 40% of the heart failure patients are with preserved ejection fraction in contrast with popular belief that at least some degree of reduced left ventricular function is always there. We have a number of clinical trials – both randomised and non-randomised – that focus on the heart failure patients with reduced ejection fraction ( HFrEF). Lately we have the results of PARADIGM HF trial that were available in 2016 that establish the role of sacubitril/valsartan ( ARNI) in the management of HFrEF. Both the American and European guidelines recommend ARNI in place of ACEI/ARB in the management of HFrEF. Unfortunately there is no approved therapy for the patients of HFpEF.

With this background, PARAGON HF trial was undertaken to compare valsartan alone vis a vis combination of sacubitril & valsartan in the management of HFpEF. 4822 patients with ejection fraction >45% ,having NYHA Class II-IV , with elevated levels of nucleotides were enrolled . Primary endpoints were composite of hospitalisation from heart failure and death from cardiovascular causes. Results of PARAGON HF were published in September this year . Analysis of the results show that ARNI didnot show significant difference in the patients with HFpEF. The incidence of death from cardiovascular causes was 8.5% in the sacubitril–valsartan group and 8.9% in the valsartan group. There were 690 hospitalizations for heart failure in the sacubitril–valsartan group and 797 in the valsartan group (rate ratio, 0.85; 95% CI, 0.72 to 1.00). Quality of life and New York Heart Association functional class were improved in the sacubitril– valsartan group.

In the editorial of the same issue where the results of PARAGON HF trial was published, O'Connor & deFilippi observed interestingly that “often, when a clinical trial does not meet its primary end point, we learn more from the secondary analyses than with a successful intervention.” The authors pointed out that neprilysin level is lower in HFpEF and the comparator valsartan has got potent beneficial effect and these both influence the result of the trial.

Thus findings of PARAFON HF provide a newer insight in the concept of management of HPpEF.

**BC - 016**

## **ROLE OF DEVICE THERAPY IN HEART FAILURE MANAGEMENT**

**Anil Saxena**

During last few decades, there have been tremendous advances in treatment of cardiac failure. Several new drugs acting on the renin-angiotensin-aldosterone, autonomic nervous system, and natriuretic peptide system have been introduced and when used alone or in conjunction with diuretics and digoxin have improved the morbidity and mortality from heart failure. However, a significant number of patients remain symptomatic despite optimal medical treatment. In addition, a significant number of such patients suffer from sudden cardiac death due to ventricular arrhythmia. Biventricular pacing (cardiac resynchronization therapy) and ICD therapy address these problems in these patients.

### Biventricular pacing (Cardiac Resynchronization Therapy)

A significant number of patients (20-30%) with heart failure suffer from diseased conduction system which usually manifests as LBBB. Infrequently RBBB or nonspecific intraventricular conduction defect is observed. The result of such conduction disorder particularly in patients with LBBB is a dyssynchrony in activation and contraction of left ventricle (LV). As the electrical impulse travels segment by segment, parts of LV contract at different times, resulting in a less efficient systole. Such dyssynchrony impacts the failing ventricle adversely and results in rapid progression of heart failure. There is sufficient evidence that the clinical progression of heart failure and mortality increase as a function of QRS duration. Increasing QRS duration has progressive deleterious effect on prognosis of heart failure patients.

Cardiac resynchronization therapy (CRT) by biventricular pacing is a novel treatment aimed at resynchronizing the left ventricular activation and contraction in such patients who have broad QRS particularly with LBBB pattern. The modality consists of a pacing system which provides atrial synchronous biventricular pacing. Interventricular septum and LV lateral wall are stimulated simultaneously or with slight delay to achieve synchronized contraction of septum and free wall. The implantation is done in local anesthesia in cardiac catheterization laboratory, with transvenous access. Atrial and right ventricular pacing is done in the usual manner. An additional LV pacing lead is introduced via coronary sinus to pace the lateral wall of the LV. If coronary sinus anatomy is unsuitable, or optimum pacing parameters can not be achieved, an epicardial lead is placed on LV lateral wall via left thoracotomy, and the lead is then tunneled into the pacemaker pocket.

Biventricular pacing has been shown to improve stroke volume and cardiac output. There is improvement in functional capacity as evidenced by significant increase in walking distance, feeling of improved well being, and reduction in number of hospital admission due to congestive heart failure. Additional evidence indicates reverse remodeling of left ventricle, with reduction in LV size over a period of time. There is increased survival, as evidenced by the CARE-HF trial.

### Implantable Cardioverter Defibrillator Therapy

Cardiac failure is associated with higher mortality, which increases with deteriorating NYHA functional class. A majority (55-60%) of NYHA class II and III patients die suddenly, mainly due to occurrence of malignant ventricular arrhythmias. Though NYHA class IV patients have much higher annual mortality (30-40%), the fraction of sudden death decreases to about 30% as more patients die due to pump failure.

ICD therapy has been shown to increase survival in patients with cardiac failure. Initially the therapy was applied for secondary prevention to patients with very high risk of sudden cardiac death (SCD). This included survivors of sudden death, and patients with symptomatic spontaneous ventricular tachycardia (VT). Subsequently, several trials have shown benefit of ICD in primary prevention of SCD in patients of heart failure. Most recent of these is SCD-HeFT trial, in which 2521 patients were randomized to one of the three groups: ICD implantation, amiodarone therapy, or placebo. All patients received conventional cardiac failure treatment as usual. The trial results were presented at AHA 2004 annual meeting and revealed 23% reduction in overall mortality with ICD compared to placebo group. Results of amiodarone therapy were similar to placebo.

ICD is an implantable electronic device which monitors cardiac rhythm constantly to detect variations. It has a detection algorithm which can detect ventricular tachycardia and treat it automatically. The device uses several therapy options to terminate ventricular tachycardia. Initially anti-tachycardia pacing is attempted which consists of overdrive burst pacing. If the arrhythmia persists, the device can perform a synchronized cardioversion. For ventricular fibrillation, a defibrillatory shock is immediately delivered.

In conclusion, biventricular pacing or CRT, and ICD therapies constitute well established therapeutic modalities for patients with heart failure. While the CRT improves quality of life and survival in patients with medically refractory heart failure, the ICD prolongs survival in patients with heart failure, particularly in those with a high risk of sudden cardiac death.

## ECHOCARDIOGRAPHIC EVALUATION OF PROSTHETIC VALVES

S.K. Parashar

The treatment of valvular lesions comprises of balloon valvuloplasty, valve repair, valve replacement which is either surgical or transcatheter. The prosthetic valves can be classified into three categories: Mechanical, biologic, and transcatheter valves like Edward Sapien or Core valve which are essentially bioprosthetic. Each prosthetic valve has its own anatomic characteristics which can be appreciated on echo. Despite numerous advances having been made for the development of better prostheses, there remains several problems related to their use like thrombosis, thromboembolism, hemolysis, tissue overgrowth, regurgitation, and damage to endothelial lining.

**Echo evaluation of prosthetic valve:** Before echocardiographic evaluation, it is extremely important to know some clinical data like the type and size of the replacement valve, the date of surgery, current blood pressure and heart rate, the patient's height, weight, and body surface area (BSA) to identify a possible patient-prosthesis mismatch (PPM), last INR report and last available echo report. Any recent change in symptoms like dyspnoea are important and can point to flow obstruction. The qualitative parameters include echocardiographic imaging methods like 2-D & 3-D transthoracic echo, 2-D and 3-D transesophageal echo. However cinefluoroscopy should be liberally used whenever indicated. The quantitative parameters include Doppler derived transprosthetic velocity and pressure gradient; transprosthetic jet contour and acceleration time, keeping in mind that all prosthetic valves are inherently stenotic. Doppler velocity index (DVI); effective orifice area (EOA) are other important parameters to be evaluated. Some common complications of prosthetic valves include (a) prosthetic valve obstruction (b) valve dehiscence with moderate to severe MR, (c) endocarditis (d) patient-prosthesis mismatch (e) tissue valve degeneration (f) iatrogenic complications. The two common causes of mechanical prosthetic valve obstruction include thrombus and pannus ingrowth.

**Thrombus & Pannus:** After prosthetic valve implantation a membrane of granulation tissue, as a response to healing forms, may cause obstruction. This granulation tissue is called pannus. Usually thrombus is present in 75% cases, pure pannus in 10% and combination of both in 15% cases.

Thrombus can occur anytime after surgery with strong relationship to low INR, is large and soft and equally involves mitral and aortic valve. Pannus usually occurs 1-5 years after surgery with no relationship to INR. It is small and dense and more common over aortic valve.

The normal gradients across various valves are well documented depending upon size and type of valve e.g. in mitral position the mean transvalvular gradient is usually near-about 5.0 mmHG and mitral PHT below 130 msec.

**Patient-prosthesis mismatch (PPM):** When the EOA of normally functioning prosthetic valve is too small in relation to BSA of the patient leading to abnormally high post-operative gradients, this condition is called PPM. It has a significant impact on short and long-term mortality. In the aortic valve an indexed EOA of  $< 0.65 \text{ cm}^2/\text{m}^2$  indicates severe PPM while  $> 0.85 \text{ cm}^2/\text{m}^2$  is normal. The corresponding values for mitral prostheses are  $< 0.9$  and  $> 1.2$  respectively. However it should be considered when other causes of elevated transprosthetic gradient like intrinsic valve dysfunction, high flow state, technical errors, and central jet artifact in bileaflet valve are excluded.

**Prosthetic valve regurgitation:** In the assessment of prosthesis regurgitation it is extremely important to distinguish physiologic from pathologic regurgitation. First, we must remember that mechanical prostheses have a normal regurgitant volume known as "leakage backflow". This "built-in" regurgitation theoretically prevents blood stasis and thrombus formation using a washing effect. Backflow jets are



characterized by being short in duration, narrow, and symmetric. On the other hand, pathological jets tend to be broad and of a high velocity. Both transthoracic and TEE will be needed for evaluation. In this situation one should look for other common causes like flail bioprosthetic cusp, presence of pannus, thrombus, vegetations, abscess formation, or prosthesis dehiscence

Role of 3-D Echo: Three-dimensional (3D) TEE allows an accurate assessment of prosthetic discs and planimetric evaluation of the prosthetic area. 3D-Echo is superior to 2D-TEE, especially in the assessment of paravalvular leak regurgitation (PVL) and it provides improved localization and analysis of the PVL size and shape

In summary, compared to native valves, echocardiographic evaluation of prosthetic valves is certainly more complex, both for the examination and the interpretation.. However a well performed transthoracic, transesophageal and 3-D echo can give good insight into prosthetic valve evaluation.

**BC - 018**

## **PERICARDIUM AND IT'S DISEASES.**

### **G Vijayaraghavan**

Pericardium is a living organ covering the heart. It reflects many disorders of the heart as well as its own diseases. When the pericardium appears normal but with effusion one has to suspect that the fluid is mainly a transudate due to heart failure or rarely a systemic disease. It could be part of even a viral fever. In all other conditions you should look for edematous pericardium with thickness of the pericardium or even masses attached to pericardial surface. In chronic cases one can even see pericardial thickening and calcification as in constrictive pericarditis.

In discollagenosis pericardium may appear thickened with effusion and some other stigmata like pulmonary hyper tension. The pericardial effusion may appear and disappear on treatment and surprisingly may recur on reduction of treatment especially steroids and methotrexate. The dynamicity of pericardium can easily observed in patients with discollagenosis.

Rapid accumulation of pericardial fluid or massive pericardial effusion may increase the intrapericardial pressure and when the intrapericardial pressure is more than the atrial pressures filling of the heart is impaired and pericardial tamponade occurs. This will exaggerate the respiratory variation of tricuspid and mitral flow pattern as well as the aortic and pulmonary flow pattern. Such exaggeration of valvar flow velocities will help us to diagnose pericardial tamponade by Doppler tracings. Pericardial tamponade is a cardiac emergency and should be suspected clinically and proven by echo Doppler signs and immediately treated.

Constrictive pericarditis is the end result of inflammatory or uremic pericarditis with signs of constriction mimicking tamponade, and marked thickening of pericardium with calcification in some patients. When constriction occurs with signs of effusion one may diagnose effusive constrictive pericarditis.

Regional pericarditis and effusion may occur and it may produce signs of tamnade when it occurs rapidly or when it presses in cardiac chambers resulting in reduced filling. One should remember the constrictive pericarditis may mimic restrictive cardiomyopathy and myocardial pathology demonstrated by echo and Doppler signs alone will help us to differentiate the two.

## TIPS AND TRICKS FOR SUCCESSFUL LEFT MAIN PCI

**Fazila-Tun-Nessa Malik**

National Heart Foundation Hospital & Research Institute is a 450 bedded tertiary cardiac hospital, fully equipped with all modern tools.

We started with a single Cath-lab in 1999. At present we have 5 fully functioning Cath-labs.

We started doing Left Main PCI on a regular basis since 2007.

Up till October 2019 we have performed a total of 2028 Left Main PCI. Of which 77.9% were distal Left Main cases. Double stent strategy was adopted in 18.5% of these patients (375 patients).

For successful Left Main PCI certain Tips & Tricks have helped us:

1. Before starting the procedure strategy needs to be decided.
2. Proper lesion preparation is mandatory.
3. For Ostial Left Main
  - Short tipped Guides are ideal.
  - After wire has been positioned the guide should be disengaged slightly.
  - During positioning of stent guide needs to be completely removed from LM.
  - 1-2 mm of deployed stent should protrude into the Aorta
  - Balloon inflation time should be short (Less then 30 sec).
  - Proximal end of stent should be flared.
4. For Left Main PCI the stent used should always be of proper size, length with excellent radio-opacity, side branch accessibility & optimal radial strength.
5. For proper positioning of stent orthogonal views are mandatory.
6. Single stent strategy is preferred in the vast majority of distal left main cases.
7. For double stent strategy DK crush technique is very effective.
8. Final kissing is mandatory in double stent strategy.
9. Always do POT & Re-POT as required.
10. Imaging is very helpful in double stent technique.
11. Rota should be used early on in heavily calcified left main disease.
12. For elderly patients, patients with multiple co-morbidities or Poor LV function with multi-vessel disease staging is often very helpful.

## GRAFT VESSEL (SVG) ANGIOPLASTY

**Shams Munwar**

Saphenous vein grafts are commonly used conduits for surgical revascularization of coronary arteries, but associated with poor mid and long term patency rates and is limited by accelerated atherosclerosis and intimal fibrosis of the saphenous vein graft after its use as conduit. At 1 year, the incidence of 1 or more total SVG occlusion has been reported to 41% after on-pump bypass surgery. Because of increased morbidity and mortality with repeat CABG, SVG intervention is considered by many to be the preferred revascularization modality in patients with diseased SVGs and accounts for approximately 5% to 10% of all percutaneous interventions, as shown in AWESOME randomized trial and registry by Morrison et al. Several trials on CABG such as PRAGUE 4, PREVENT IV, RIGOR, ROOBY, PREVENT IV has demonstrated different survival outcome.

Percutaneous coronary intervention of SVGs is a feasible treatment strategy, and has historically been associated with a high risk of early and late adverse ischemia events (e.g., no-reflow, periprocedural myocardial infarction), intermediate-term restenosis and SVG disease progression outside of the target segments compared with PCI of lesions in native coronary arteries, as demonstrated in Stent of Saphenous (SOS) trial by Lichtenwalter et al. Several trial on PCI of SVGs are mentionable such as SAVED Trial, SAFER Trial, FIRE Trial and PROXIMAL Trial has given almost similar outcomes. In The ISAR-CABG trial, PCI with DES vs BMS, demonstrated lower 12 month adverse incidence of target vessel revascularization in the DES group without any significant difference in all-cause mortality, MI and definite or probable stent thrombosis. In the BASKET- SAVAGE trial clear superiority of DES was demonstrated at 12 months and the low MACE rate maintained up to 3 years. DIVA trial from 2017, which is a much bigger trial, involving a much bigger number of patients however did not show any difference of MACE or TVF at 12 months.

PCI in SVGs in our Bangladeshi patient perspective is not an uncommon procedure by the interventionist. While doing PCI of SVG, several things must be kept in mind before proceeding for stenting to unblock the occluded conduits.

1. ACC/AHA has recommended using of distal protection device as a must to proceed.
2. The optimal pharmacological treatment for slow or no-reflow is unclear but possible use of routine GP2b3a inhibitor may provide some protection.
3. DES possibly is possibly a better option than BMS. In general ISR rate is high after SVG intervention.
4. ISR and repeat revascularization of SVG PCI might be the cause of repeat hospitalization and mortality and based on our experiences, whenever diseased SVG causes progressive ischemic syndromes, we may recommend PCI of the native coronary arteries if technically possible.

BC - 021

## PREVALENCE OF ISCHEMIC HEART DISEASE AMONG BANGLADESHI POPULATION WITH DIABETES IN DISTRICT LEVEL.

**Md. Mahfuzur Rahman, Muhammad Anwarul Kabir**

**Background:** Diabetes is an established risk factor for the development of ischemic heart disease (IHD). Several studies have reported a higher prevalence of IHD in diabetic patients compared to non-diabetic subjects. However, there is lack of adequate data in Bangladesh regarding this issue. Hence, we aimed to estimate the prevalence of IHD among the diabetic patients of three districts of Bangladesh.

**Methods:** Patients were enrolled for this study through medical camps held in Feni, Noakhali and Chandpur. For all the patients came to the camps, data on gender, age, existence of risk factors including diabetes and diagnosis of IHD was recorded in pre-defined case report form. IHD was diagnosed by ECG findings of either ST-segment depression or T-wave inversion or ST-segment depression with T-wave inversion along with clinical features.

**Results:** A total of 476 patients were enrolled. Among them, 286 patients had diabetes (mean age  $49.7 \pm 12.8$  years, 166 male and 120 female). Diabetic patients had multiple risk factors. 59.4% had hypertension, 30.8% had family history of cardiovascular disease and 18.2% patients were smokers. IHD was diagnosed in 55 patients (19.2%). The prevalence of IHD in diabetic patients was significantly higher compared to non-diabetic patients (19.2% versus 8.4%).

**Conclusion:** This study found that the prevalence of IHD vary among the district-level diabetic patients of Bangladesh and this prevalence increases with the rise of age. These findings could be useful to draw the attention of health authorities towards district-level diabetic patients and to adopt preventive strategies for them against IHD.

Keywords: Diabetes, ischemic heart disease, age groups, district-level, Bangladesh.

BC - 022

## OUR EXPECTATION AND OUTCOME OF A HEART-FAILURE PATIENT AFTER CARDIAC RESYNCHRONIZATION THERAPY.

**Umme Habiba Ferdaushi**

**Background:** Cardiac resynchronization therapy (CRT) is the established management for patients with moderate to severe symptoms due to left ventricular systolic dysfunction who present with signs of electrical dyssynchrony. But there is a wide variability of response with CRT. Up to 30% of patients receiving CRT do not have a positive response. In contrast, some patients show good response with clinical improvement. For good response and maintenance of that response, patient selection, knowledge regarding predictors of responder, regular assessment of the patient and device parameter optimization is mandatory.

**Case description:** 72 years old gentleman with previous MI (STEMI), diabetes presents with dyspnea, fatigue, ankle edema, NYHA class III. His ongoing medication was betablockers, ACEi, statins, aspirin, furosemide 40 mg. ECG: sinus rhythm, QRS duration 138ms with IVCD. Echocardiogram: LVEF 35%,

LVEDD 56mm and mild to moderate mitral regurgitation. After hospitalization we optimized medication according to guideline. After 2 months patient was still symptomatic NYHA III, no edema, only walks one block at slow pace. So CRTD was implanted. Then we assessed patient clinically like symptomatic relief, NYHA functional class, quality of life, exercise tolerance, need for hospitalization, medication along with lab data, 1,3,6month assessment of echocardiogram to see the reverse LV remodeling. We also interrogate device routinely to assess therapy delivery, percent biventricular pacing, extrasystole, atrial fibrillation, active hours per day, heart rate histogram, heart rate variability. After 3 months patient is feeling much better, NYHA class II, medications- betablockers dose increased, ACEi, MRA, statins, aspirin, furosemide 40 mg now once per week. CRTD pacemaker checkup: SR, paced QRS duration 120 ms, Biventricular pacing 100%. On echocardiogram: LVEF 37%, LVEDD 54mm and mild mitral regurgitation. At 6 months follow up patient is in NYHA I-II, does not feel any limitations, resumed sports activities. Echocardiogram reveals LVEF 40%, LVEDD 52mm and mild mitral regurgitation, no arrhythmias. So etiology is not an independent predictor of response to CRT.

**Conclusion:** We should adapt our assessment depending on HF severity and etiology e.g. we should put different weight on clinical status (including lab data), extent of reverse remodeling, device parameters, need for hospital care, CRT therapy delivery and consider improvements and should recognize that the improvements may not last.

BC - 023

## **EFFECT OF ANGIOTENSIN RECEPTOR NEPRILYSIN INHIBITOR ON CARDIAC STATUS & NT-PRO BNP LEVEL COMPARED TO VALSARTAN IN PATIENTS WITH CHRONIC HEART FAILURE WITH REDUCED EJECTION FRACTION: A HOSPITAL BASED RANDOMIZED CONTROL TRIAL**

**Md. Abu Zahid, Shakil Ghafur, Haripada SarkeN, RabindraNath Barman, Abdullah-AI-Mahmud, Mahbubur Rahman, Hasanul Island**

**Background:** Heart failure with reduced ejection fraction is strongly connected with considerable morbidity and mortality, but there is still deficiency in appropriate treatments to prevent this condition. We examined the effect and safe dose of angiotensin receptor neprilysin inhibitor (ARM) with such disorder compared to valsartan.

**Methods:** The patients were enrolled with chronic HF aged > 40 years, severely symptomatic NYHA class II -IV, an elevated NT-pro BNP > 400 pg/ml level and a reduced LVEF of <40%. Patients were randomly assigned into the treatment arms either ARM (50 mg titrated to 100 mg twice a day) or valsartan (40 mg titrated to 80 mg twice a day) and followed for a median of 88 days. The primary outcome was a mode of cardiovascular death and changes in the rate of ejection fraction & NT-pro BNP level.

**Results:** Occurrence of cardiovascular death 4 (8%) in the ARM treatment arm, while 11(22%) in the valsartan treatment arm with significant hazard ratio in the ARM group [Hazard Ratio=0.56; 95% CI: 0.34, 0.64; p<0.05] during a median of 88 days of follow up period and 2(4%) of the patients from the ARM treatment arm were hospitalized due to HF, while in the valsartan treatment arm, 10 (20%) patients were hospitalized due to HF followed by receiving treatment respectively with hazard ratio in the ARM group [Hazard Ratio=0.80; 95% CI: 0.57, 0.92; p<0.051. Furthermore, a significant effect was found to have in LVEF and NT-pro BNP at 95% level of significant (p<0.05). These effects resulted from somewhat increased in LVEF (30.44±6.71% to 38.78±8.17%) and intensely decreased in NT-pro BNP (3066.5±1882.147 pg/ml

to 808.20±592.50pg/ml) in the ARM group, as compared to valsartan group in LVEF (30.57±6.047% to 35±7.97%) and in NT-proBNP (3488.18±2912.21 pg/ml to 1886.45±1017.87 pg/ml)

Conclusion: Chronic treatment with the angiotensin receptor neprilysin inhibitor (ARM) strongly decreases the progressive NT-pro BNP as well as mortality and increases LVEF in patients with heart failure compared to valsartan.

Key words: Chronic heart failure, old myocardial infarction, ejection fraction N-terminal pro B type natriuretic peptide.

**BC - 024**

## **UTILITY OF ELECTROANATOMIC, NONFLUOROSCOPIC, 3D COLOR MAPPING FOR DIAGNOSIS AND RADIOFREQUENCY ABLATION OF ARRHYTHMIAS**

**S Mokaddas Hossain (Sadi)**

Nonfluoroscopic Electroanatomic (EAM) 3D Color mapping is a mapping method that utilizes magnetic field sensing with a specialized catheter to construct 3D endocardial maps of selected heart chambers with spatial resolution less than 1mm. In mid 1990 nonfluoroscopic EAM revolutionized the interventional EP. In 1996 Ben-Ham et al started the use of this technology for catheter ablation.

Electroanatomic mapping are contact and non contact mapping. Contact mapping includes -CARTO, NavX, Rhythmia mapping with Basket catheter, Intracardiac Echocardiography (ICE), Robotic navigation system e.g. stereotaxis. ESI -Ensite balloon array is non contact mapping.

Advantages of EAM are-it reduce fluoroscopic time, radiation dose & procedure time, 3D mapping utilizes non fluoroscopic catheter manipulation for activation and voltage mapping, precise identification and tagging of ablation site. Clinical use of EAM are quick, reliable, effective mapping and radiofrequency ablation of complex arrhythmias (VT, AT, AFL, AF, accessory pathway, AVNRT etc.)

Several EAM systems are available. Each distinguished by its technology, merits and weakness. The decision to use particular system depends on -data hoped to be gained, the arrhythmia to be targeted, the compatibility of the system with adjunctive tools, most important- the users familiarity with chosen EAM system & cost.

**BC - 025**

## **EFFICACY AND SAFETY OF DIFFERENT DOSAGE OF ROSUVASTATIN IN BANGLADESHI PATIENTS: A MULTI-CENTER REAL-WORLD STUDY**

**Prof. Abdullah Al Shafi Majumder, Prof. Taufiqur Rahman, Dr. AKM Monowarul Islam, Dr. Mohammad Ullah, Dr. Md. Alimur Reza,**

**Background:** Dyslipidemia is a major cause of disease burden in Bangladesh as a risk factor for Ischemic heart disease and stroke. Rosuvastatin is one of the most potent statins available for reducing low-density lipoprotein cholesterol (LDL-C) levels, which is widely prescribed and well accepted by the patient in Bangladesh. The price of rosuvastatin is similar to other statin used in Bangladesh. But, the effectiveness of rosuvastatin in Bangladesh has not been adequately studied. Therefore, this study was conducted to understand the efficacy and safety of rosuvastatin in real-world setting in Bangladesh.

**Methods:** This was a single-arm, non-intervention, multi-center, real-world study conducted in Bangladesh. Adult patients prescribed rosuvastatin (5, 10 or 20 mg) were enrolled in the study. The patients were observed with the objectives of assessing the percentage change from baseline in serum lipid profile, and assessing the proportion of patients reaching the LDL-C target goal of <100 mg/dL after 12 weeks of therapy.

**Results:** 280 patients were enrolled, with mean age 51.56 years, mean body mass index (BMI) 26.43 kg/m<sup>2</sup>, mean baseline LDL-C 155.35 mg/dL. Overall, the mean LDL-C levels declined by 32.1% (49.9 mg/dL) from baseline to end-of-study, while the mean TC levels declined by 24.8% (58.8 mg/dL) and the mean HDL-C level increased by 16.71% (5.7 mg/dL). The proportion of patients that attained the LDL-C goal (LDL-C < 100 mg/dL) in 5-mg, 10-mg and 20-mg dosage group was 24%, 49.21% and 65.71% respectively. On logistic regression analysis, higher BMI and use of clopidogrel reduced the odds of attaining LDL-C goal. Overall, 10.4% of all patients reported an adverse event (AE) at the end of the study. Most AEs were reported in the 'muscle' (6.5%) and 'GI' categories (6.8%).

**Conclusion:** This study demonstrates that all dosage form of rosuvastatin was effective in lowering TG and raising HDL-C in addition to lowering its primary target LDL-C in Bangladesh. High dosage of rosuvastatin has no significant safety risk in Bangladeshi patients. Effect of rosuvastatin along with adverse events was found to be more pronounced in the initial weeks than the subsequent period.

BC - 026

## **ASSOCIATION OF RISK FACTORS WITH CORONARY ANGIOGRAPHIC FINDINGS OF FEMALE PATIENTS WITH ACUTE MYOCARDIAL INFARCTION AT A TERTIARY HOSPITAL OF BANGLADESH**

**Jinnat Fatema Saira Safa, Biplob Bhattacharjee, Anisul Awal, Ashish Dey, Prabir Kumar Das, A.K.M. Manzur Murshed**

**Background:** Coronary artery disease (CAD) is the leading cause of mortality and morbidity of women in developed and developing country. Although women in low and middle income countries have worse situation they are least studied. Cardiovascular risk factors assessment and their correlation with angiographic severity in female patients is essential to take preventive strategy and timely intervention.

**Aim:** The aim of this study was to evaluate the major risk factors of coronary artery disease and to study the relation of those cardiovascular risk factors with coronary angiographic findings in female patients with AMI .

**Methods:** This was a cross-sectional observational study carried out in the department of Cardiology, Chittagong Medical College Hospital (CMCH) from January 2017 to December 2017. One hundred and fifty consecutive female patients diagnosed as acute myocardial infarction (AMI) who subsequently underwent coronary angiography (CAG) during the study period were included in the study. Data regarding demographic, clinical & laboratory features were recorded. Severity of CAG findings was assessed by Gensini score.

**Results:** The mean age of the study population was 53.19(±10.71) years. Hypertension was the commonest cardiovascular risk factor (78%) in this study followed by obesity (68%), dyslipidaemia (62%) and diabetes mellitus (57.3%). About 80% patients had clustering of ≥3 risk factors. Proportion of patients having ST-segment elevation myocardial infarction (STEMI) and non ST-segment elevation myocardial infarction (NSTEMI) were 47% and 53% respectively. Thrombolytic was the most frequently used treatment modality for the management of STEMI patients. Double Vessel Disease, type B lesion

with Gensini score  $\geq 20$  were the most common CAG findings. Triple vessel disease and severe CAD (Gensini score  $\geq 20$ ) were more in women with three or more risk factors. A significant ( $p < 0.05$ ) linear correlation was found between Gensini score and age, triglyceride level and total cholesterol level. Other factors, including, obesity, family history, hypertension, diabetes mellitus, menopausal status were found to be more prevalent among severe coronary artery disease on CAG but the differences were not statistically significant ( $p > 0.05$ ).

**Conclusion:** The present study showed a significant relation of having multiple cardiovascular risk factors with developing more aggressive angiographic findings. It also revealed that Bangladeshi female patients of AMI had clusters of cardiovascular risk factors and presence of multiple risk factors is a predictor of severe coronary artery disease.

BC - 027

## PREDICTION OF CORONARY ARTERY DISEASE SEVERITY BY USING CHA<sub>2</sub>DS<sub>2</sub>-VAS<sub>c</sub>-HSF SCORE IN PATIENTS WITH ST-ELEVATION MYOCARDIAL INFARCTION

**Mohammad Abdur Rahim, Mir Jamal Uddin, Jafrin Jahan, Tariq Ahmed Chowdhury, Abdul Momen, AKM Monwarul Islam, Mohammad Arifur Rahman**

**Background:** CHADS<sub>2</sub> and CHA<sub>2</sub>DS<sub>2</sub>-VAS<sub>c</sub> scores are widely used in clinical practice and include similar risk factors for the development of coronary artery disease (CAD). It is known that the factors comprising the newly defined CHA<sub>2</sub>DS<sub>2</sub>-VAS<sub>c</sub>-HSF score promote atherosclerosis and associated with severity of CAD.

**Objective:** To find out the association of the CHA<sub>2</sub>DS<sub>2</sub>-VAS<sub>c</sub>-HSF score with the severity of CAD in patients with ST elevation myocardial infarction (STEMI).

**Methods:** 100 patients with STEMI were enrolled in this study after considering inclusion and exclusion criteria over a one year period from October, 2017 to September, 2018 in the Department of Cardiology, National Institute of Cardiovascular Diseases, Dhaka. Coronary angiogram was done within index hospitalization and coronary artery disease severity was assessed by SYNTAX and Gensini score system. Patients were divided into two groups on the basis of SYNTAX score. Patients with SYNTAX score  $\geq 23$  assigned as group I and SYNTAX score  $< 23$  assigned as group II. The CHA<sub>2</sub>DS<sub>2</sub>-VAS<sub>c</sub>-HSF score was calculated. Cut - off value of high CHA<sub>2</sub>DS<sub>2</sub>-VAS<sub>c</sub>-HSF score was  $\geq 4$ .

**Results:** In this study mean age of study population was  $51.8 \pm 9.8$ , male patients were predominant (79%). Among the studied patients, highest percentage had history of smoking followed by hypertension, diabetes mellitus and family history of CAD in group I patients. It was found that DM and family history of CAD and history of stroke/TIA were significantly higher in group I than group II. An increasing trend of SYNTAX score was observed according to the CHA<sub>2</sub>DS<sub>2</sub>-VAS<sub>c</sub>-HSF score. SYNTAX score was significantly higher in CHA<sub>2</sub>DS<sub>2</sub>-VAS<sub>c</sub>-HSF score  $\geq 4$  than CHA<sub>2</sub>DS<sub>2</sub>-VAS<sub>c</sub>-HSF score  $< 4$  ( $26.3 \pm 6.3$  vs.  $12.1 \pm 7.7$ ,  $p < 0.001$ ). Patients with CHA<sub>2</sub>DS<sub>2</sub>-VAS<sub>c</sub>-HSF score  $\geq 4$  had severe coronary artery disease than CHA<sub>2</sub>DS<sub>2</sub>-VAS<sub>c</sub>-HSF score  $< 4$  assessed by SYNTAX score with 84.4% sensitivity and 81.9% specificity (AUC:0.83, 95% CI: 0.746-0.915,  $p < 0.001$ ).

**Conclusion:** CHA<sub>2</sub>DS<sub>2</sub>-VAS<sub>c</sub>-HSF score was positively correlated with the severity of CAD. This score could be considered as a predictor of coronary artery disease severity.

**Key words:** CHA<sub>2</sub>DS<sub>2</sub>-VAS<sub>c</sub>-HSF score, SYNTAX score, Severity of coronary artery disease, STEMI.



BC - 028

## THROMBOCYTOPENIA INDUCED BY GIANT ATRIAL THROMBUS IN RHEUMATIC VALVE DISEASE, A CASE REPORT OF SUCCESSFUL MITRAL VALVE REPLACEMENT

Md. Lokman Hossain, Mahbubor Rahman, Mahbubul Islam, Sadeka Dina, Amran Ahmed, Shameem Ahsan,

**Introduction:** Mitral stenosis increases blood stasis, representing a major risk factor for left atrial clot formation. Severe thrombocytopenia, in the absence of heparin treatment or major hepatic dysfunction, could be explained by 'acute thrombosis-associated thrombocytopenia'. We report a case of giant left atrial thrombus in severe mitral stenosis associated thrombocytopenia.

**Methods and Materials:** A 52-year-old woman with no previous medical history presented with congestion signs and rapid atrial fibrillation. There was evidence of thrombocytopenia ( $70 \times 10^9/L$ ) and moderate elevation of transaminases, NT Pro BNP 4811 pg/ml and Dengue Ag NS1(ICT):Negative. An abdominal ultrasonography showed no liver alterations and no splenomegaly. Transthoracic echocardiogram confirmed the finding and showed rheumatic severe mitral valve stenosis, severe TR (PASP:96 mmHg) with severe pulmonary hypertension and a giant left atrial thrombus with pulmonary vein infiltration. Coronary angiography reveal normal epicardial coronary arteries. The patient underwent bioprosthetic mitral valve implantation, removal of the giant thrombus and postoperative course was uneventful.

**Results:** Immediate after surgery platelet count increased to  $125 \times 10^9/L$ . She was then checked at the follow up clinic 3 weeks after the surgical intervention the platelet count became  $390 \times 10^9/L$  that drastically raised from the initial count  $70 \times 10^9/L$ .

**Conclusion:** A patient of severe mitral stenosis with giant left atrial thrombus causing thrombocytopenia, in whom platelet count normalized after surgical removal of the thrombus along with valve replacement.

BC - 029

## ENDOSCOPIC VEIN HARVESTING- OUR EXPERIENCE AT BSH

Md. Shaukat Ali, Tanveer Zaman, Shahidur Rahman, Mahfuza Begum, Mohammad Ali Bhuiyan

Cardiac surgery department of Bangladesh Specialized Hospital Ltd. started doing endoscopic harvesting of the Great Saphenous Vein for CABG operation from 8<sup>th</sup> April 2019, using the Vasoview Hemopro2™ system (Maquet Getinge Inc.). Between April and September 2019, 39 cases of Endoscopic Vein Harvesting have been accomplished. The patient characteristics were as follows- mean age  $54.94 \pm 10.57$  years, females 2.86%, BSA  $1.74 \pm 0.14 m^2$ , BMI  $24.24 \pm 2.92$ , Obese 5.1%, previous MI 54.3%, HTN 91.43%, DM 51.43%, COPD 5.71%, Hypothyroidism 17.14%, PVD 5.71%, previous stroke/ TIA 5.71%, S.Creatinine  $1.04 \pm 0.28 mg/dl$ , renal failure 2.86%, CCF 5.71%, cardiogenic shock 2.86%, unstable angina 20%, failed PCI 11.43%, TVD 97.14%, significant left main disease 22.86%, NYHA Class III/IV status 71.43%, mean LVEF  $54.53 \pm 8.95$ , impaired LVEF 22.86%, mean EUROScore II predicted mortality  $1.13 \pm 0.58\%$ , mean STS Score predicted mortality  $0.61 \pm 0.33\%$ .

Peroperative variables were- IMA use 97.14%, mean number of arterial grafts  $2.09 \pm 0.37$ , mean number of total grafts  $3.71 \pm 0.67$ , mean average diameter of coronary vessels  $1.62 \pm 0.13$ , incomplete revascularization 2.86%, IABP use 2.86%, conversion to on-pump 2.86%, endarterectomy 8.57%

Complications were- neurological 0%, preoperative MI 2.86%, reopening 2.86%, chest wound infection 5.71%, leg wound infection 0%, femoral wound infection 0%, renal failure 2.86%, postoperative cardiac

arrest 5.71%, mean ventilation time 13.36±5.5 hr, prolonged ventilation >24 hr 5.71%, respiratory complications 7.15%, ARDS 8.57%, high inotropic support 20%, GIT complications 5.71%, arrhythmia 31.45%, median hospital stay 8 days (IQR 7-8), prolonged hospital stay > 8 days 26.47%, 30-day mortality 5.17%, readmission within 30 days 0%.

BC - 030

## **SURGICAL STATISTICS OF THE ONLY PERIPHERAL PUBLIC HOSPITAL PERFORMING CARDIAC SURGERY IN BANGLADESH**

**Md. Maruf Hasan Alam Arnob, Md Abdul Quaium Chowdhury, AM Asif Rahim, Md Anisuzzaman, Md Fazle Maruf, Suman Nazmul Hosain**

**Introduction & Objectives:** Optimal healthcare facilities and human resource distribution strategies in health policy could enhance geographic accessibility of healthcare by properly allocating resources based on regional requirements minimizing duplication and waste of valuable resources. Cardiac Surgery is one of the most difficult branches of Medical Science. The Department of Cardiac Surgery, Chittagong Medical College Hospital (CMCH) is The only regional heart surgery patient care centre in Bangladesh, came operational on the 9<sup>th</sup> of April 2012 and the 1<sup>st</sup> Open Heart Operation was performed on the next day, the 10<sup>th</sup> of April. Objectives of this paper are to describe the statistics of the patients who received treatment services from the Department of Cardiac Surgery CMCH, and to provide guidance for establishing such new cardiac surgery centers in peripheral Bangladesh.

**Methods & Material:** Data is collected from Indoor patient admission registers, OT record books, ICU datasheet, Out Patient Department register & electronic recording devices. Collected information is compiled and analyzed using appropriate statistical methods.

**Results:** From inception to October 2019 a total of 476 surgical procedures have been performed. These include CABG, MVR, AVR, AVR, ASD Closure, VSD Closure, Intracardiac repair of TOF, Excisions of Atrial myxoma, CMC, PDA Ligation and others. There were 24 perioperative deaths. The 68<sup>th</sup> patient was the first and only patient to die among the first 100 cases. The overall operative survival rate is thus 95%, which is excellent for a new peripheral center with minimal available support system. The number of patient attending the Out Patient Department has increased from 71 in 2012 to 1549 in 2018. At least 10 admitted patients from other departments are referred everyday for cardiovascular consultation. Majority of the patients who got medical services from here were from lower socioeconomic status.

**Conclusion:** Starting a specialized service like cardiac surgery in a peripheral centre is always challenging. This has been possible in CMCH through proper planning, meticulous preparation, team effort and innovative thinking. Sharing our experience would help and may provide guidance for other possible cardiac surgical centers beyond Dhaka in the peripheral parts of Bangladesh.

BC - 031

## **VIDEO LARYNGOSCOPY IN CARDIAC OT: OUR EXPERIENCE AT CHITTAGONG MEDICAL COLLEGE & HOSPITAL**

**Minhazur Rahman Chowdhury, Suman Nazmul Hosain, Mamunur Rahman, Subir Barua, , Md Abdul Quaium Chowdhury, Md Fazle Maruf, Jitu Das Gupta, Satyajit Dhar**

**Background:** Endotracheal intubation is an essential primary skill for all anesthesiologists. For Cardiac Anesthesiologists rapid and proper intubation is even more important as failure may cause serious

consequences. Video laryngoscope provides a better real time view of the larynx, epiglottis and vocal cords. The Department of Cardiac Surgery and Cardiac Anesthesia of Chittagong Medical College Hospital is the first center in this region to introduce video laryngoscope in cardiac OT. The objective of this comparative study was aimed to compare the haemodynamic response to laryngoscopy, intubation time, success rates and operator's comfort using the conventional Macintosh laryngoscope and video laryngoscope in adult patients undergoing cardiac surgery.

**Materials and Methods:** A total of 30 adult patients were randomly included in this comparative study, subjected to general anesthesia for cardiac surgery, to be intubated using either conventional Macintosh direct laryngoscope or video laryngoscope. Patients were intubated by 3 different consultant anesthesiologists of our department. The outcome measures were the hemodynamic response to intubation, intubation time and the intubation success rates and operator's ease.

**Results:** There wasn't much of a difference between Video laryngoscopy and conventional laryngoscopy in terms of intubation time and success rate. Video laryngoscopy exhibited less hemodynamic response to laryngoscopy and intubation, however the difference was not statistically significant in this small group of patients. Operators were much more comfortable with Video laryngoscope than conventional laryngoscope particularly with the cases of difficult intubation because of the better glottic view with the former.

**Conclusion:** Video laryngoscope is preferred by cardiac anesthetists because of better glottic view. Further study is recommended with bigger study population to conclude about hemodynamic response to intubation, intubation time and success rates.

BC - 032

## INFERIOR VENA CAVA MANAGEMENT: A DECADE LONG EXPERIENCE

**Md Anisuzzaman, AM Asif Rahim, ATM Iftekhar Hossain, Motiur Rahman Sarker, Md Abdul Quaium Chowdhury, Md Fazle Maruf, Suman Nazmul Hosain**

**Introduction:** Inferior vena cava (IVC) is one of the two great vessels draining into right atrium. Due to its retroperitoneal and deep location behind the organs, IVC is often a troublesome vessel for the cardiac surgeons to deal with.

**Objectives:** Objective of this study is to build a management strategy from our experience for dealing with the challenging cases among the Bangladeshi patients and for avoiding unwanted morbidity and mortality.

**Methods:** This retrospective study includes 22 cases operated in different hospitals between January 2009 and December 2018. Data were collected from admission registrars, patient files, operation notes and ICU charts.

**Results:** The total number of cases was 22, among them 10 (45.5%) were routine and 12 (54.5%) were emergency cases. Among the routine cases 07 (31.8%) were renal cell carcinoma, 02 (9%) were retroperitoneal sarcoma and 01 (4.5%) was neurogenic tumor. Among the emergency cases, 02 (9%) were traumatic (bullet) injury and the rest 10 (45.45%) cases were iatrogenic injury during other abdominal surgery. There was no mortality in this series.

**Conclusion:** Inferior vena cava surgery is a challenging one. Inadequate preparation may jeopardize the patient or damage control surgical option might have to be chosen. Proper assessment of the case, shock management and availability of proper facility, IVC surgery skilled manpower, adequate blood for transfusion may save the precious life.

**BC - 033**

## **A CASE REPORT OF AN OFF-PUMP CABG OF A PATIENT WITH TVD, ICM, DM, CKD AND HEART FAILURE**

**Md. Golam Kibria, Amanur Rahman, Ahsan, Mr. Emdad**

A 60 year Bangladeshi gentleman, hailing from Malaysia, diagnosed with TVD, ICM, DM, CKD, and Heart Failure, was admitted in the hospital initially for medical management.

During admission, his ECHO findings were LVIDd 70, IVIDs 52 and EF 23% with organized LV thrombus and Pro-BNP 10,524. After 1 week of medical treatment, patient recovered from Heart Failure and ECHO findings improved.

After 1 month comprehensive medical treatment with complete bed rest at home, he was admitted again with the aim of CABG. After admission, he was treated medically; complete bed rest with anti failure and diuretics for 7 days. During this period, patient improved clinically. So, OP-CABG was planned with the aim of 3 Grafts and very minimal handling, without disturbing the LV thrombus, with full preparation of IABP machine keeping in hand. On 3<sup>rd</sup> September, 2019 OP-CABG was performed with 3 grafts; LIMA to LAD, RSVG to OM<sub>1</sub> and PDA. Per-operative period was uneventful, except for a short run of AF, which was managed by a single internal DC shock. Patient was shifted to ICU with minimal Ionotrope and Amiodarone. Later on Ionotrope was increased to moderate dose.

In the ICU patient had a short run of VT/VF at 1 AM, which was managed by external DC shock twice. The patient was extubated on 2<sup>nd</sup> POD. After extubation, he developed moderate neurological complications, which was managed by Haloperidol, Prochlorperazine Hydrochloride and Quetiapine. After using Haloperidol, patient developed deep sleep and gradually developed hypoxia. An Intensivist of Respiratory Medicine was consulted, who advised re-breathing mask and medical management with Cocktail therapy (Aminophylline, Frusemide, Hydrocortisone) and Injection Methylprednisolone Acetate for 3 days. Eventually, the hypoxia improved.

On 1<sup>st</sup> POD, patients Serum Creatinine level was raised (3.9 mg/dL), which was managed with oral Acetylcysteine by Ryle's tube. On 2<sup>nd</sup> POD, his Blood Sugar level was raised (around 20-25 mmol/L), for which a Diabetologist was consulted and the Blood Sugar returned to normal within 2 days by an appropriate dose of Insulin. From 4<sup>th</sup> POD onwards, his clinical condition improved gradually and the hypoxia was corrected. Patient was discharged on 7<sup>th</sup> POD on haemodynamically stable condition.

**BC - 034**

## **SURGICAL TREATMENT OF CARDIAC TUMORS – OUR EXPERIENCE AT CHATTOGRAM MEDICAL COLLEGE HOSPITAL**

**Muhammad Abdul Quaium Chowdhury, Suman Nazmul Hosain, Md Fazle Maruf, Md Anisuzzaman, A M Asif Rahim, Subir Barua, Minhazur Rahman Chowdhury**

**Background:** Primary cardiac tumors are quite rare. Among the primary cardiac tumors, most are benign in nature. Vast majority of the benign heart tumors are myxomas. These may present with a wide range of symptom spectrum from being completely asymptomatic to life-threatening complications, such as stroke, acute heart failure or even sudden death. The present study summarizes our 6 years clinical experience with surgical resection of intracardiac tumors.

**Methods:** 19 patients, who underwent surgical excision of primary intracardiac myxoma between July 2013 and June 2019 were included in the study. 16 (84.2%) of them were females and 3 (15.8%) were males. Mean age was  $43.42 \pm 14.1$  years. In 18 patients the tumors were located in the left atrium and in 1 patient it was in the right atrium. The commonest attachment site was the interatrial septum. Majority of the patients were presented with dyspnea. Preoperative diagnosis was established by transthoracic echocardiography with Color Doppler. All patients were operated through median sternotomy.

**Results:** All the patients survived after operation. Mean tumor dimension was  $3.6 \pm 1.4$  cm in largest diameter. Solid tumors were detected in 12 patients (63.1%) while papillary myxomas were found in 7 patients (36.9%). On follow-up of 19 patients during periods ranging from 3 months to 6 years, there was no late death or any serious late complication.

**Conclusions:** Although cardiac myxomas carry the risk of severe systemic and cardiac symptoms, prompt surgical excision gives excellent early and long-term results.

BC - 035

## **CANNULATION STRATEGY IN AORTIC SURGERY-OUR EXPERIENCE AT NHFH&RI**

**Gafur MA, Chanda PK, DMA Kabir**

Cannulation is the key to success in cardiac surgery. The choice of the optimal arterial cannulation strategy for surgery on proximal aorta and arch remains a controversial area and a subject of intense debate. The search for the best cannulation strategy for aortic surgery assumes increasing importance due to its impact on clinical outcomes. Several cannulation strategies have been proposed to establish cardiopulmonary bypass (CPB) for aortic surgery and each one of these has its pros and cons.

We have done 120 case of aortic surgery (aortic root, ascending aorta, arch pathology, descending aortic pathology) from March 2012 to November 28, 2018. There age range from 7 to 67 years and male was 106 and female was 14. We have done 120 case of different cannulation in different artery demanding according to the aortic pathology. Femoral artery cannulation-10, Right axillary artery -8, Right common carotid artery -18, Arch cannulation 28, Left common carotid artery -6, Right brachiocephalic artery 30.

Initially we do femoral cannulation but in case of aortic dissection we change to axillary cannulation. Axillary artery cannulation is time consuming and right brachiocephalic artery sometimes arise from false lumen in case of aortic dissection, Then we do left common carotid artery cannulation. Now we standardization it in right common carotid artery or Right brachiocephalic artery if feasible. Although cannulation choice depend upon the individual variation of patient and their diseases condition.

Cannulation strategy represents a critical choice that may play a crucial role in determining operative outcomes in aortic surgery. Most centers, worldwide, axillary cannulation is rapidly emerging as the preferred strategy for both acute as well as chronic cases. Of course, as for any other surgical strategy one must always remember the golden rule that the cannulation strategy for proximal aortic and arch surgery should be chosen taking into account the patient's characteristics.

**Key Words:** Cannulation Aortic dissection, Aneurysm, Delnido cardioplegia.

BC - 036

## THE 2 SLING TECHNIQUE FOR EASY MOBILIZATION AND POSITIONING OF THE ARRESTED HEART DURING ON PUMP CABG

**Ahsan Uddin Mahmud, Md Fazle Maruf, Md Abdul Quaium Chowdhury, Md Anisuzzaman, A M Asif Rahim, ASM Iftekhar Hossain, Suman Nazmul Hosain**

**Background:** Conventional on pump CABG is the gold standard method followed all over the world. Mobilization and positioning of the arrested heart during grafting is an important step during On Pump CABG. Usually it is held by an assistant besides the surgeon or by some instruments. The aim of this study was to highlight a simple manoeuvre to mobilize and fix the heart by using 2 slings, one through the transverse sinus and another around the inferior vena cava (IVC). This technique was first demonstrated by a visiting Turkish team and is adopted by the surgeons of Chittagong Medical College Hospital (CMCH).

**Methods:** This retrospective study was conducted in the department of Cardiac Surgery CMCH to evaluate the efficacy of the 2 sling technique applied to 100 patients undergone On pump CABG between July 2016 and June 2019. After harvesting the graft conduits and cannulation for cardiopulmonary bypass, a long sling of surgical gauze of about 60 cm length is passed through the oblique sinus. A similar second sling is passed around the inferior vena cava just like IVC taping. These 2 slings are placed around the paralyzed heart and fixed to the draping sheets with the help of Kocker's forceps. These slings help the surgeons to put the heart in various positions and allow anastomoses on otherwise difficult locations.

**Results:** By this technique time of graft anastomosis, number of assistants and CPB time were reduced. Surgeons are happy with the quality of graft anastomosis and ease of the procedure. Just 1 patient had minor injury during tissue dissection by Kelley forceps around IVC and 1 had injury of pulmonary artery while pulling the sling out. Both the cases were easily managed.

**Conclusion:** Using 2 slings around the heart makes the graft anastomosis much easier and comfortable than conventional technique.

BC - 037

## THE RAGE TRIAL (RADIAL ARTERIAL GRAFT IN THE ELDERLY)

**Tanveer Zaman, Md. Shaukat Ali, Shahidur Rahman, Mahfuza Begum, Mohammad Ali Bhuiyan**

**Background:** Use of radial artery (RA) as a second arterial conduit in Coronary Artery Bypass Grafting (CABG) is well established and appreciated for its higher long-term patency rate compared to vein grafts. This study tends to investigate if there are any detrimental consequences when it is used in elderly (aged 60 and above) population of Bangladesh.

**Materials & Methods.** A total of 71 patients who received RA grafts at elective, isolated CABG operation were consecutively enrolled in this study from May 2018 to September 2019. 31 patients were in the Elderly group and 40 patients were in the Non-elderly group. The groups were compared for baseline characteristics and co-morbidities; perioperative techniques, findings, events and procedures; and postoperative outcomes or end-point variables inclusive of local complications related to RA harvesting wound

**Results.** Elderly and Non-elderly groups had statistically different age ( $p=0.000$ ) and STS Score predicted mortality ( $p=0.000$ ). Operative techniques, events, findings and procedures were similar. Clinical outcomes were found to be similar with no statistical difference between the groups. Number of deaths also was not statistically different. There were no local complications related to RA harvesting wound in either of the two groups.

**Conclusion.** Harvesting and grafting of radial artery in suitable patients, using meticulous "no-touch" technique and for ideal target coronary artery stenosis is as safe in the elderly patients as in the younger ones.

**Key words:** Radial Artery, CABG, Elderly.

**BC - 038**

## **PRIMARY PCI IN A POST-CABG CASE PRESENTING WITH INFERIOR STEMI: WHAT SHOULD BE THE STRATEGY?**

**F. Aaysha Cader, M. Maksumul Haq**

Introduction: The presentation of acute ST segment elevation myocardial infarction (STEMI) in a patient with prior CABG poses a dilemma in terms of revascularization strategy. This is further compounded when the infarct-related artery is a venous graft to the native artery which is a chronic total occlusion (CTO). There are multiple issues to consider, particularly fibrinolysis versus PCI. Fibrinolytic therapy may be less effective in this population. Furthermore, STEMI in prior CABG due to acute SVG occlusion have worse outcomes because of poor acute and long-term results of SVG stenting. Our cases demonstrates a strategy of primary PCI in such a post-CABG STEMI case.

Case Summary: A 62-year old diabetic, hypertensive Bangladeshi male presented with chest pain for 1.5 hours. He underwent CABG surgery in 2004, following triple vessel disease. He was haemodynamically stable. ECG showed STEMI (inferior). Echo revealed LV EF~45%, inferior and infero-lateral wall hypokinesia. Emergent coronary angiography showed occluded LAD and narrow-calibered LCx; dominant RCA with diffuse disease followed by total occlusion in mid part. SVG to RCA was 100% occluded with huge thrombus burden in mid part. LIMA to LAD was patent with good post-graft flow. In STEMI, "minute means muscle". As RCA was CTO, we decided to do primary PCI to SVG to RCA. Using JR 3.5 6 F guide catheter and Sion Blue wire, the occluded SVG was crossed. Thrombus aspiration was done by Diver C.E. max catheter. SVG was stented by 3.5x23 mm DES (20 ATM) and postdilated by 4.0x10 mm NC balloon (22 ATM). Good distal TIMI III flow was achieved (Figure). Post-PCI, DAPT comprised of aspirin and ticagrelor.

Take-home message: In the absence of definitive guidelines regarding primary PCI in post-CABG STEMI's, this case demonstrates the necessity of thrombus aspiration and rapid reperfusion with TIMI III flow in thrombus-laden graft vessel. Ideally, embolic protection devices should be used. The patient must be followed up closely, as SVG's are notoriously prone to re-stenosis.

**Conclusion:** Address of correspondence: Dr. F. Aaysha Cader, Registrar & Specialist, Department of Cardiology, Ibrahim Cardiac Hospital & Research Institute, Dhaka, Bangladesh.

**BC - 039**

## **AN ODD EXIT OF ISR!!!**

**Md Minhaj Arefin**

Case abstract: A 50 years old male presented with AMI (inf) and underwent elective PCI to LAD and LCX. He was well for 15 months then again developed chest pain. Repeat CAG showed ISR in LAD & LCX. LAD ISR was treated with pre dilatation followed by another DES deployment & LCX ISR was treated with POBA only. The end result was satisfactory. He was found clopidogrel resistant so switched to ticagrelor along with aspirin. Again after 3 months he developed chest pain and repeat CAG showed recurrent ISR. This time we treated with POBA only. Unfortunately again after 2 months he is complaining chest pain on walking along with shortness of breath. Repeat CAG showed 2 large aneurysm in proximal LAD along with ISR. Send for urgent surgical correction but 2 days after he developed STEMI (A/S) and thrombolysed. But we couldn't save this patient.



BC - 040

## IATROGENIC GIANT LEFT ANTERIOR DESCENDING CORONARY ARTERY PSEUDOANEURYSM WITH CONTAINED PERFORATION FOLLOWING PERCUTANEOUS CORONARY INTERVENTION.

**Mofassel Uddin Ahmed, Jai Ajitchandra Sule, Kang Giap Swee, Theodoros Kofidis**

Giant iatrogenic coronary pseudoaneurysms are very rare. Left untreated, they may cause serious adverse outcome. We present a case of a male patient with recurrent NSTEMIs and coronary interventions who developed a large LAD artery pseudoaneurysm with contained rupture. He underwent excision of the large proximal LAD pseudoaneurysm, excision of the previous LAD stent, ligation of proximal LAD, and coronary artery bypass grafting with LIMA-LAD graft. He subsequently recovered and was stable on follow up. In conclusion, an aggressive surgical strategy, though difficult, is likely the best means of management for lasting benefit.

**Keywords:** Giant pseudoaneurysm, contained rupture

BC - 041

## ASSOCIATION OF HYPOALBUMINAEMIA WITH THE ANGIOGRAPHIC SEVERITY OF CORONARY ARTERY DISEASE IN PATIENTS WITH ACUTE CORONARY SYNDROME

**Jubair Mahmud Parvez**

**Background & Objective:** Serum albumin as a biomarker of coronary artery disease (CAD) severity and mortality in patients with acute coronary syndrome (ACS) is presently a subject of growing interest. Evidences accumulated from the studies suggest a possible association between serum albumin and severity of CAD. The present study was intended to find the association between serum albumin level and severity of CAD in patients of ACS.

**Materials and methods:** The present cross-sectional analytical study was carried out in the Department of Cardiology, National Institute of Cardiovascular Diseases (NICVD), Dhaka, Bangladesh, over a period of 1 year from July 2017 to June 2018. A total of 104 ACS patients undergoing coronary angiogram in the above-mentioned hospital during the index hospitalization within the specified time-frame were included in the study. The exposure and outcome variables were serum albumin and severity of CAD respectively. Serum albumin level was termed low if it fell below 3.5 gm/dl and considered as group I and normal if it was  $\geq 3.5$  gm/dl considered as group II. Severity of coronary artery disease was determined by Friesinger score and Leaman score with Friesinger score  $> 8$  and Leaman score  $\geq 9$  being considered as severe disease. Associations of traditional risk factors (smoking habit, diabetes mellitus, hypertension, dyslipidaemia, family history of IHD and overweight or obesity) with severity of CAD were investigated.

**Result:** None of the demographic characteristics and traditional risk factors for CAD except age was found to be associated with severity of CAD. Friesinger Score was significantly higher in patients with low serum albumin than that in patients with normal serum albumin ( $8.84 \pm 3.71$  vs.  $6.38 \pm 3.02$ ,  $p < 0.001$ ). Leaman Score was also significantly higher in the former group than that in latter group ( $12.48 \pm 8.44$  vs.  $8.50 \pm 4.94$  mm,  $p = 0.004$ ). The risk of having severe CAD in patients with low serum albumin was 5.46 (95% CI = 2.141 – 13.925) ( $p < 0.001$ ) times higher in terms of Friesinger score and

2.58(95% CI = 1.097 – 6.083) (p = 0.03) times higher in terms of Leaman score than that in patients with normal serum albumin. Spearman's correlation revealed that the two variables serum albumin and Friesinger score, exhibit a significantly inverse correlation (r = -0.323, p = 0.001). Serum albumin demonstrated a significantly inverse correlation with Leaman score (r = -0.254, p = 0.009). **Conclusion:** The study concluded that serum albumin concentration was significantly associated with the severity of coronary artery disease with low serum albumin carrying at least two-fold higher risk of having severe CAD, as measured by the Friesinger and Leaman score, in patients with ACS.

**Key words:** Hypoalbuminaemia, Serum Albumin, Angiographic severity, Friesinger score, Leaman score, Acute Coronary Syndrome.

BC - 042

## HURDLES IN ASD DEVICE CLOSURE IN ADULT- EXPERIENCES OF FIRST 180 CASES

**Momen A, Chowdhury NIH, Ali MZ, Uddin MJ, Huda RM, Nurunnabi ABM, Sayami LA, Alam A, Hossain MD, Rahman AU, Alam I, Hashem S, Haque A, Shahriar S, Haque M,**

**Introduction:** Intervention in structural heart disease is challenging. In a suitable case of ASD secundum device closure is preferred over surgery with fewer morbidity and hospital stay.

**Methodology:** It is a single operator experience of first 180 cases of ASD device closure in adult ( $\geq 18$  years) mostly done in NICVD. Patients having ASD secundum with hemodynamically significant left right shunt with at least rims 5mm rim except the aortic rim was taken for device closure. ASD size more than 34 mm and any rim deficit other than aortic rim, patients having pulmonary artery systolic pressure more than 65 mmHg were excluded. Preoperative TEE assessment was mandatory and peroperative TEE guidance was the default approach. Patients will followed up index hospitalization and one months after the procedure and the 6 monthly for 24 months.

**Results:** Total 180 cases were attempted for device closure with male female ratio 1:3. Mean age was  $28 \pm 11.5$ SD and most aged patient was 70 years old man. In 170 (94%) patients ASD device was successfully deployed. Among them in 2 patients had double ASD covered by single device and one had ASD and valvular PS and ASD closure done few days after the pulmonary balloon valvuloplasty. Aortic rim was absent in 55(31%) patient and another 35(19%) patients it was less then 5mm. First attempt of deployment was taken 2 size bigger than the highest ASD diameter by TEE and 3 size bigger if any rim had floppy elements. TEE assessment of size was correlated in 135(75%) cases needed no size upgradation. In 35 (25%) patients upgradation of size was required. Failure to deployments were mismatching of size 6 (3.3%), device embolization, permanent cobra deformity, pericardial tamponade and failure to cross the ASD in 1(0.6%) patient each. Embolized case was managed urgent surgical closure with retrieval of the device from LV. Cobra deformity was developed in 6 cases and reshaping was done. The median size of the device was 26 with highest size 38. Average procedure time  $35 \pm 12.5$ SD min with fluoroscopy time  $12 \pm 6.3$ SD. Predischarge TTE was showing device in situ in all 100 cases with no residual shunt in 99 cases and in 2 (1.1%) case a 3 mm residual defect was found producing non-significant shunt. All patients were discharged one day after the procedure. On highest 24 months follow up no aortic erosion was found.

**Conclusion:** ASD device is safe and producing less morbidity and less hospital stay. The heavenly smile in the patient face after the successful device implantation avoiding the pain of sternotomy is beyond comparison.

## ASSOCIATION OF LOW SERUM MAGNESIUM LEVEL WITH OCCURRENCE OF VENTRICULAR ARRHYTHMIA IN PATIENTS WITH ACUTE MYOCARDIAL INFARCTION

Nizam Uddin, Abdul Wadud Chowdhury, MD Khalequzzaman, Mohsin Ahmed

**Background:** Acute Myocardial Infarction is the leading cause of morbidity and mortality throughout the world. Its prevalence among developing countries has increased significantly over the past two decades. Acute myocardial infarction is associated with electrolyte imbalance most commonly hypomagnesemia and hypokalaemia. Both are associated with ventricular arrhythmia which can lead to increase hospital mortality and morbidity.

**Objectives:** To find out association of hypomagnesemia with ventricular arrhythmia in patients with acute myocardial infarction.

**Methods:** Patients with acute myocardial infarction admitted in the department of Cardiology, DMCH, within the study period and who fulfilled the inclusion and exclusion criteria were taken as study sample. Informed consent was taken from all patients and then the patients were evaluated by detailed history, clinical examination and relevant investigations. Serum magnesium level was measured after admission. The sample population was Grouped into Group A (Acute myocardial infarction with normal serum magnesium) and Group B (Acute myocardial infarction with hypomagnesemia). Patients were followed up regularly till discharge or death for evidence of ventricular arrhythmia. Then the obtained data was analysed with SPSS 22.0.

**Results:** Among 110 patients of Acute MI, 44 patients were in Group A who had plasma magnesium level  $\geq 0.7$  mmol/l and 66 patients were in Group B who had plasma magnesium level  $< 0.7$  mmol/l. Incidence of hypomagnesemia was 60% and more common in male. Male vs female percentage of hypomagnesemia were 61% vs 39%. Mean age was  $54.16 \pm 11.72$  yrs vs  $57.52 \pm 10.59$  yrs in group A vs group B. On admission serum magnesium level was  $0.9218$  vs  $0.523$  mmol/L (group A vs group B). The study showed that group B patients were more haemodynamically unstable and mean SBP and DBP were found  $89.39 \pm 19.93$  and  $60.67 \pm 11.56$  mm-Hg respectively. Troponin I was markedly increased in group B than A (i.e.  $4.7 \pm 1.79$  vs  $14.6 \pm 4.3$  vs ng/ml). Adverse cardiac events such as cardiogenic shock (group A vs group B = 11.36% vs 28.27%) and ventricular arrhythmias (group A vs group B = 34% vs 72.73%) were also higher in group B than group A. Mean hospital stay for group B patient was higher than group A ( $6.78 \pm 0.85$  vs  $5.31 \pm 0.35$  days). The study result showed that ventricular arrhythmia is negatively correlated with serum magnesium and the correlation coefficient was  $-0.541$ . It also showed that serum Magnesium is positively correlated with Potassium ( $r = 0.831$ ,  $p < 0.01$ ) and Calcium ( $r = 0.902$ ,  $p < 0.001$ ). Multiple logistic regression analysis showed that hypomagnesemia is an independent risk factor for ventricular arrhythmia.

**Conclusions:** This study showed that in patients with acute myocardial infarction, hypomagnesemia is common and it is significantly associated with ventricular arrhythmia. So the presence of hypomagnesemia should alert the physicians to adopt corrective measures as it increases both mortality and morbidity.

Keywords: Hypomagnesemia, Ventricular Arrhythmia, Acute myocardial infarction.

## ASSOCIATION OF LOW SERUM POTASSIUM LEVEL AND VENTRICULAR ARRHYTHMIAS IN PATIENTS WITH ACUTE MYOCARDIAL INFARCTION

Gias Uddin Md. Salim, Abdul Wadud Chowdhury, Azizul Hoque, Nizam Uddin, Smita Kanungo

**Background:** Acute myocardial infarction (AMI) is one of the life threatening manifestations of Ischemic heart disease (IHD) and includes both ST elevated myocardial infarction (STEMI) and Non ST elevated myocardial infarction (NSTEMI). Its prevalence among developing countries has doubled during the past two decades. Ventricular arrhythmias frequently complicate the AMI patients in response to electrolytes imbalance.

**Objectives:** The main objective of the study was to find out the association of low serum potassium level with ventricular arrhythmias in AMI patients.

**Methods:** This hospital based prospective observational study was conducted in the department of cardiology in DMCH. Patients with AMI admitted in the CCU of DMCH were approached for inclusion in this study. Total 200 newly diagnosed AMI patients who fulfilled the inclusion and exclusion criteria were taken as study subjects. The study subjects were divided into 2 groups, patients with low potassium level (Plasma potassium level  $<3.50$  mmol/L) were considered as Group A and patients with normal potassium level (3.5-5.0 mmol/L) were considered as Group B. All the patients were treated with usual treatment protocol of this Institute. Within 12 hours of admission, serum potassium level was done to all the study patients. Occurrences of ventricular arrhythmias were also monitored during this period by periodic recording of ECG and also by observing the cardiac monitor. All the ECG of ventricular arrhythmias within 12 hours of admission were reevaluated from computer storage memory and printed copies were collected for documentation. Data collection were done by researcher himself and all necessary information were recorded in pretest case record form. Statistical analysis was done by SPSS 22.

**Results:** The mean age of the studied patients was  $56.2 \pm 10.3$  years. Among the study subjects 42 (21%) patients with hypokalemia were included in group A and 158 (79%) patients with normal potassium level were included in group B. Frequency of different arrhythmias were higher in group A than group B (66.6% vs 19.6%,  $p=0.001$ ). Ventricular tachycardia (33.3% vs 9.5%,  $p=0.001$ ), Ventricular fibrillation (14.3% vs 3.2%,  $p=0.005$ ) and significant premature ventricular complexes (19% vs 6.9%,  $p=0.02$ ) were occurred higher in group A than group B respectively. Among group A, Ventricular arrhythmias were present in 80% severe hypokalemic ( $\leq 2.50$  mmol/l) patients and 47% mild to moderate hypokalemic ( $>2.50$  mmol/l) patients with  $p$  value  $<0.05$ . In multiple logistic regression analysis revealed hypertension, diabetes mellitus and hypokalemia were found to be significantly associated with the development of arrhythmias with the ORs being 1.21, 2.79, 2.81 and 6.925 respectively ( $p < 0.5$ ). Pearson's correlation revealed strongly negative correlation between serum Potassium level and development of arrhythmias with  $r=-0.95$  and  $p < 0.001$ . **Conclusion:** Low serum potassium level was significantly associated with ventricular arrhythmias in AMI patients within 12 hours of admission into hospital.

**Key words:** Acute myocardial infarction (AMI), Hypokalemia, Ventricular arrhythmias.

## EFFECT OF PCI ON QT<sub>c</sub> DISPERSION IN PATIENTS WITH ANGINA

Dr. Md. Shafiqul Islam, M G Azam, Jafrin Jahan, S K Mondal, Md Minhaj Arefin

**Background:** 'Coronary heart disease (CHD) is now the leading cause of death worldwide; it is on the rise and has become a true pandemic that respects no borders'. For the diagnosis of coronary artery disease, the 12 leads electrocardiogram (ECG) is the most readily available non invasive test by which, in addition of diagnosis, localizing and estimating the size of myocardial ischemia can be determined. Abnormally high QT dispersion has been correlated with risk of arrhythmic death in various cardiac diseases including CAD. An increase in QTd is reported to predict the occurrence of life-threatening ventricular tachyarrhythmias and sudden cardiac death in patients with ischemic heart disease

**Materials and Methods:** This was a Cross sectional analytical study was conducted in Department of Cardiology, National Institute of Cardiovascular Diseases, Dhaka from January 2013 to December 2013. A total of 100 consecutive patients with angina based on predefined enrollment criteria were included in the study. All patients were evaluated by history, clinical examination, biochemical analysis, and coronary angiogram (CAG) which was performed during index hospital admission. PCI was done only if the vessel was significantly stenosed. i.e. for LMCA -  $\geq 50\%$ , for LAD, LCX and RCA it was  $\geq 70\%$  as significant stenosis. Severity of stenosis of the involved vessels were categorized as severe ( $\geq 90\%$ ) and moderate ( $<90\%$ ).

**Results:** Among the study population 76 (76%) patients were male and 24 (24%) patients were female. The left anterior descending artery (LAD) group comprised 37 patients and there were significant differences between before and after PCI QTc dispersion ( $90.5 \pm 38.9$  vs  $70.4 \pm 39.6$  ms,  $p=0.001$ ). The left circumflex artery (LCX) group was comprised of 6 patients and there were significant differences between before and after PCI QTc dispersion ( $62.2 \pm 41.9$  vs  $50.2 \pm 37.2$  ms,  $p=0.001$ ). The right coronary artery (RCA) group consisted of 18 patients, there being significant differences between before and after PCI QTc dispersion ( $84.9 \pm 40.7$  vs  $69.1 \pm 41.5$  ms,  $p=0.001$ )

**Conclusion:** PCI reduces QTc dispersion significantly among patients with angina. This QTc dispersion change is not influenced by sex, smoking, beta-blockers, hypertension, diabetes, renal impairment, stable or unstable angina but it depends upon the severity of coronary artery stenosis, involvement of coronary vessel and number of vessels. Reduction of QTc dispersion is a good sign of successful PCI that indicates successful reperfusion which carries an excellent prognostic value of revascularization. Further long term follow up will establish it.

## LIFETIME EXPERIENCE OF A YOUNG LADY WITH MVR

Sharadindu Shekhar Roy

Mrs. X, 35 years, a normotensive, non-diabetic female admitted into coronary care unit, NICVD, Dhaka, Bangladesh with the complaints of

- Breathlessness for 7 days, progressively increasing to NYHA class IV at presentation.

Four months back, she was diagnosed as a case of chronic rheumatic heart disease, mitral stenosis (severe) and mitral regurgitation (moderate) with moderate pulmonary hypertension. At that time, she underwent mitral valve replacement (MVR) by St. Judes bi-leaflet mechanical prosthetic valve. On query, patient gave history of irregular intake of warfarin after mitral valve replacement (MVR) surgery

and she stopped in taking the drug for last few days. Patient had no history of fever. On bedside physical examination she was dyspnoeic and restless. Resp. rate was 36/min. Cold and clammy skin was found. Pulse rate was 120 b/min, regular and small volume. Her BP was 70/40 mm Hg and temperature was normal. Precordial auscultation revealed that, metallic sound was absent and there was bilateral fine basal crepitation. So, we had a high index of suspicion for the diagnosis of prosthetic mitral valve dysfunction most likely due to thrombosis in this patient. Urgent transthoracic echocardiography was done on admission in CCU and it revealed probable acute prosthetic mitral valve thrombosis. As the patient was hemodynamically unstable, little time was in hand for obtaining surgical opinion, there was no LA thrombus, patient denied surgery and there was no contra-indication, it was decided for fibrinolysis in this case. She was treated by low dose slow infusion regimen (Inj. Streptokinase 2,50,000 I.U bolus in 30 minutes and then, 1,00,000 I.U /hour up to 24 hours) followed by LMWH for 5 days. After achieving the target INR oral warfarin was restarted. After fibrinolytic therapy, patient was clinically improved. There was no sign of systemic embolism, no sign of bleeding and trans-prosthetic mitral valve gradient decreased significantly to normal pressure gradient at the 5<sup>th</sup> day.



**BC - 047**

## **CARDIAC SURGERY - SCENARIO OF IN BANGLADESH**

**Farooque Ahmed**

In the last couple of decades the disease burden across the world has shifted from communicable diseases to non-communicable diseases (NCDs). Moreover, a majority of people suffering from NCDs reside in the developing countries. These nations, not having completely dealt with the scourge of communicable diseases yet, are now facing the additional burden of NCDs. The already inadequate and stretched healthcare systems in these countries have meant that the mortality from NCDs is also higher. At present, NCD are responsible for almost 67% of overall yearly deaths in Bangladesh and nearly 30% of them are caused by cardiovascular diseases. Cardiac care of Bangladesh started its journey in 1970 by establishment of Cardiology Department in IPGM & R by National Professor Brig. (Rtd.) Abdul Malik. In 1979 Government of Bangladesh took the scheme to establish 110 bedded Cardiac Hospital. Institute of Cardio Vascular Disease (ICVD) started at Shaheed Suhrawardy Hospital. Since then cardiac surgery is expanding gradually over time and now above ten thousand cardiac surgeries are being performed yearly in 26 cardiac centers country wide. In spite of multiple challenges and constrains, our cardiac surgeons are now adopting themselves with the complex cases, recent technologies and ensuring updated treatment facilities for our patients.

**BC - 048**

## **CURRENT TRENDS AND FUTURE PERSPECTIVE IN CORONARY SURGERY**

**Lutfor Rahman**

Coronary artery disease is one of the leading causes of death in our country. Since the introduction of coronary artery bypass grafting (CABG) in the 1960s, it has rapidly become one of the most commonly performed major surgical procedures. Despite an increasingly higher-risk profile of patients, outcomes have significantly improved over time, with declining rates of operative mortality and major morbidity, which may be due in part to better patient selection, improved surgical techniques, and better alternative techniques in patients presenting with cardiogenic shock (eg, mechanical support devices). Large multicenter randomized and observational studies have reported excellent short-term outcomes.

Despite the rise in rates of percutaneous coronary intervention (PCI) and the technical advances in stent design, CABG remains crucial for patients with multivessel coronary disease that is too complex to be treated optimally with PCI. According to data from the Organization for Economic Cooperation and Development, CABG is on average performed at a rate of 44 per 100 000 individuals.

We will discuss contemporary indications for CABG, practice patterns, and outcomes. We will also discuss specific surgical techniques and a number of technical advances that have received attention over the last decade and could potentially improve short- and long-term outcomes after CABG.



BC - 049

## **MINIMALLY INVASIVE CARDIAC SURGERY (MICS): INTRODUCING A NEW ERA IN CARDIAC SURGERY AT GOVERNMENT SECTOR OF BANGLADESH.**

**Asraful Hoque Sium, Mohammad Moynul Islam, Asif Ahsan Chowdhury,  
Amin Md Kamrul Alam, Quazi Abul Azad**

Conventionally open heart surgery on cardiopulmonary bypass although safe and effective, but is associated with definite morbidity and mortality due to deleterious effect on body systems like hematological, renal, hepatic, respiratory and nervous system.

In the last two decades minimally invasive cardiac surgery is rapidly emerging as safe and cost effective alternative therapeutic modality. The aims of minimally invasive cardiac surgery are to achieve an early extubation, less blood loss, rapid recovery, shorter hospital stay, less patient morbidity, faster return to routine activity, increased patient comfort and low cost without compromising on the results.

Various strategies have been developed to avoid cardio-pulmonary bypass, global myocardial ischaemia and hypothermia. Minimally invasive cardiac surgery is specially beneficial in patients who are at risk due to left ventricular dysfunction, calcified aorta, carotid artery occlusion, bleeding diathesis and impaired renal dysfunction.

Herein, we give an account of our progress and accomplishments with regard to minimally invasive cardiac surgery in government sector of Bangladesh. Less invasive heart surgery is a great opportunity and not a threat for our profession, and can help provide an edge for our high-tech healthcare system without colliding with the principles of value-driven outcomes.

Keywords: Minimally invasive cardiac surgery, Conventional open heart surgery, Left ventricular dysfunction

BC - 050

## **CURRENT STATE-OF-THE-ART PRACTICE OF CORONARY REVASCULARIZATION**

**Dr. Jahangir Kabir**

Coronary artery bypass grafting (CABG) is the most common operation performed in cardiac surgery, with well-established symptomatic and prognostic benefits in patients with multi-vessel and left main coronary artery disease. Although there is an increasingly higher-risk profile of patients, outcomes have significantly improved over time, with significant reductions in operative mortality and major morbidity, which may be due in part to better patient selection, improved surgical techniques, and better alternative techniques in patients presenting with cardiogenic shock (eg, mechanical support devices like IABP,ECMO). Five- and 10-year survival rates are now  $\approx$ 85% to 95% and 75%, respectively. Recent ESC/EACTS guidelines on myocardial revascularization clearly recommended CABG as the first choice of revascularization strategy in patients with multi-vessel disease and acceptable surgical risk to improve prognosis in the scenario of left ventricular dysfunction. A number of technical advances could further improve short- and long-term outcomes after coronary artery bypass grafting. Developments in off-pump and no-touch procedures; conduit selection and use of multiple arterial grafts, including bilateral internal mammary artery and radial artery; intraoperative graft assessment by

flow measurement; minimally invasive procedures; and hybrid coronary revascularization are discussed. Coronary artery surgery remains the core, bedrock procedure in our specialty. It is time to focus on improving the operation by developing an invested group of individuals and centers whose primary focus will be on the optimal management of coronary artery disease.

## **NEW INSIGHTS INTO MECHANISMS OF ACUTE MYOCARDIAL INFARCTION**

**Tan Huay Cheem**

There are 3 types of lesions that cause coronary thrombosis: (i) plaque rupture, (ii) plaque erosion and (iii) calcified nodules. Most adult human atheromatous lesions originate as preexisting intimal masses with accumulation of fat subjacent to it. When this early adaptive intimal thickening progresses to become pathologic intimal thickening, the atherosclerotic process enters into a more dynamic stage with the subsequent formation of fibroatheroma. Fibrous cap atheroma classically shows a distinct layer of connective tissue completely covering the lipid core. It may have a thick or thin cap, overlying a lipid-rich core. It has a "true" necrotic core which contains cholesterol esters, free cholesterol, phospholipids, and triglycerides.

The concept of 'vulnerable plaque' was first introduced by Muller et al in an attempt to understand why certain lesions are likely to rupture resulting in coronary thrombosis. The consensus clinical definition of vulnerable plaque now is 'any thrombosis-prone plaque or plaque at a risk of rapid progression, with potential of becoming a culprit lesion and triggering an acute coronary syndrome (ACS) independent of its specific morphology although thin cap fibroatheroma (TCFA) is still believed to be the most prevalent lesion type in 60-70% of cases. The presence of TCFA is the focal manifestation of an underlying systemic disease.

Studies have shown that lesion severity and morphology are dynamic and progressive before clinical expression. Myocardial infarction frequently develops from previously non-severe lesions that progress over time. Intraplaque hemorrhage is a major cause of plaque progression. The occurrence is due to ruptured vasa vasorum which are usually formed as a result of neovascularisation in response to hypoxia induced by growing plaque. The presence of red blood cells increases the risk of plaque destabilization by provoking inflammation and enlargement of the necrotic core, and causing plaque rupture or erosion. Not all plaque rupture leads to thrombotic occlusion of the coronary artery. In fact, many may remain silent. In the course of healing, the thrombi may organize, remodel and be incorporated into the atherosclerotic plaque itself, resulting in plaque size growth.

Coronary atherosclerosis with resultant atherothrombosis contributes to clinical manifestation of coronary occlusion and acute myocardial infarction. Although often times silent, recurrent atherothrombotic events lead to increase plaque size and coronary luminal narrowing. Greater understanding and better clinical detection of thin cap fibroatheroma, especially by noninvasive imaging, may help prevent development of future coronary syndromes.

## **ZERO CONTRAST PCI**

**Afzalur Rahman**

Zero contrast Angioplasty is a technically promising approach for the prevention of contrast induced nephropathy. With the advancement of intracoronary imaging and physiology in the field of coronary angioplasty now it is possible to do coronary angioplasty with no or minimal dye especially by an experienced operator.

Contrast induced nephropathy (CIN) is a common iatrogenic complication associated with adverse outcome including need for Renal replacement therapy (RRT). It is potentially preventable. Despite of

some established approaches to prevent CIN include peri-procedural hydration<sup>1</sup> and minimizing contrast volume<sup>2</sup> percutaneous coronary intervention (PCI) in patients with advanced CKD is associated with a high risk of CIN and requirement for RRT, leading to underutilization of PCI in these high-risk patients. Zero contrast percutaneous coronary intervention (PCI) is a new approach in the prevention of contrast Induced nephropathy.<sup>3,4</sup>

With the development of expertise in advance technology like IVUS, FFR/IFR it is possible to do PCI by 'minimal' or 'zero' contrast successfully with successful stent implantation and resolution of ischemia. Zero contrast PCI is creating new era in the field of coronary intervention specially treating those patients with CKD who are suffering from refractory angina and not indicated or fit for Cardiac Bypass surgery. Series of cases were done which include LAD bifurcation PCI, LAD ostial PCI by zero contrast or minimal contrast for the **first time in Bangladesh** which reflects beside treating simple lesion, complex cases like bifurcation lesion and LAD ostial lesion can also be treated by zero contrast or minimal contrast angioplasty.

**BC - 053**

## **NIGHTMARES IN CATH LAB DURING PCI"**

**Kaisar Nasrullah Khan**

With the advancement of hardwires, techniques and skill, chance of grave complications in cath lab during PCI has significantly come down (in 1980 death during PCI was 5% and currently it's <1%) though not totally abolished. There are some situations can easily be named as interventionists nightmare, such...1) incidence of abrupt vessel closure is 0.3%, of these, Guide catheter induced coronary artery dissection has an incidence rate of 0.02-0.07%.Dissection can be ante grade or retrograde to aortic root (0.2%), spiral dissection, 2) No reflow next to acute stent thrombosis, acute peri-procedural stent thrombosis rate is 1%. 3) Perforation causing pericardial effusion even tamponade 4)Stent embolization5)Air embolism(incidence 0.1-0.3%) 6)Bleeding complications 7)Contrast induced nephropathy and allergic reaction 8)CVD(stroke)during PCI. All these complications can be fatal. Now, why these nightmares occur? Risk of complication rises with complex coronary anatomy, stiff hardwires, patient related factors as increasing age, co-morbid conditions and also operator related fact as failure to predict the probable risk in procedure, and lack of available resource to tackle these nightmares.

So ,every procedure can turn risky if its not planned ,and high risk cases turn to even worse nightmare this way. Conversion of the nightmare to sweet dream lies in early planning and having proper pharmacological and instrumental resource in hand, and execution of the strategy we plan to combat that nightmare. An equipped cath lab with skilled staff and having a cardiac team is must.

## STEP BY STEP APPROACH OF BIFURCATION CORONARY LESION INTERVENTION

**Muhammad Maksumul Haq**

**Definition:** American College of Cardiology (ACC) & American Heart Association (AHA) definition of bifurcation lesion is “a lesion (>50% Diameter) located in a bifurcation point with a side branch >2mm in diameter”. However, in European Bifurcation Club (EBC) gives importance to any side branch which is clinically significant for the patient and defines bifurcation as follows: “a coronary artery narrowing occurring adjacent to, and/or involving, the origin of a significant side branch”. Bifurcation has three components proximal main branch (pMB), distal main branch (dMB) and side branch (SB). The common classification used in bifurcation lesion is Medina classification which consists of stenosis of 50% or more in each in the following order: pMB, dMB and SB. Presence of lesion is coded as “1” and absence is coded as “0”.

**Challenges in Bifurcation:** Bifurcation lesions comprise approximately 15-20% of all coronary interventions. The main challenge in bifurcation stenting is to protect the SB while stenting across the SB origin especially if the side branch is very large as in left main bifurcation stenting. Compromising a large SB may have a devastating outcome. It is therefore very important to plan a bifurcation stenting depending on anatomy, diameters, angle of bifurcation, area supplied by side branch, collateral supply of vessels and availability of imaging facilities like IVUS or OCT (which is very essential in left main stenting). The most important aspect in bifurcation is to assess beforehand whether to do an elective two stent strategy or provisional two stent strategy.

**Provisional Stenting (PS):** In provisional stenting a stent is placed in the main branch (MB) across the SB and when necessary to place a second stent in the SB. Provisional stenting is simple and accounts for 80-90% of bifurcation PCIs. The problem with SB stenting is in difficulty in keeping the SB open, to re-cross across the stent struts to the SB and sometimes to pass a stent through the struts. Various techniques are employed to put a second stent in SB and each has a unique name like Culotte, T or TAP (T and Protrusion) and modifications of these techniques.

EBC recommendation, and in fact the current global consensus is a provisional strategy as the default, with a two-stent strategy as bailout. A step-by-step algorithm starting with basic anatomy assessment culminating with optimization of MB stenting and the evaluation of need for SB stenting is recommended for a successful bifurcation intervention.

1. **Anatomic assessment of bifurcation lesion:** Anatomic assessment includes the identification of a true bifurcation lesion (i.e. Medina 111,011,1010), a significant side branch (SB) and the SB angle (if acute), all of which justify an up-front systematic two stent approach.
2. **Wiring:** The next step is wiring of MB. Elective SB wiring to adopt a “*jailed wire technique*” is recommended in cases of a clinically important SB, and always when treating true bifurcation lesions. The most angulated branch should be wired first to avoid *wire wrap*.
3. **Lesion preparation:** Optimal lesion preparation in the MB, with adequate balloon predilatation, facilitates stent sizing and MB stent optimization. Routine SB predilatation is not mandated, however and could be performed if SB access is difficult, in severe and /or calcified SB lesions and if SB flow is compromised after initial wiring.
4. **MB stenting:** MB stent diameter should be selected according to the reference diameter of the distal MB. Drug eluting stents are preferred. The MB stent should extend at least 8-10 mm proximal to the carina so as to optimally facilitate proximal optimization technique (POT).

5. **Optimization after MB stenting: POT & KBI:** The objective of POT is to correct malapposition of proximal MB and facilitate SB rewiring, by modifying the orientation of the SB ostium. A short NC balloon, 0.5-1.0 mm larger than the MB stent diameter is used, by positioning the distal marker of the balloon in front of the carina and the proximal marker inside the proximal stented segment.

Kissing balloon inflation (KBI) is another important step in bifurcation PCI. It is recommended with two NC balloons, sized according to the SB and distal MB, with a short proximal overlap. Routine KBI in provisional bifurcation PCI does not improve clinical outcome. However, KBI may restore flow in case of a severe stenosis of SB ostium (>75%) or SB flow impairment (TIMI <3).

6. **Second stent in a provisional single-stent strategy:** SB stenting may be needed as bailout in provisional strategy. T-stenting or T and small protrusion (TAP) technique is commonly adopted in such scenarios, particularly in wide angles (>70°). Culotte technique can also be performed as an extension of a provisional single-stent strategy as well.

**Systematic two-stent strategies:** In true bifurcation lesions with large and diffusely diseased (>5- 10 mm) SB or in case of difficult SB wiring, an up-front two stent strategy may be performed. The most often used elective two-stent techniques are TAP, DK-crush and Culotte, especially in narrow angle bifurcations. Culotte is very popular in Europe and western world but DK-crush is popular in Asia but gaining popularity in western world too.

**Role of intracoronary imaging:** Given its procedural complexity, intracoronary imaging by means of IVUS or OCT is recommended for stent optimization in bifurcation PCI.

**Conclusion:** Bifurcation PCI is resource-intensive, requiring multiple guidewires, balloons and stents. Every bifurcation is different. As such, proper planning and a structured approach to each bifurcation lesion is important, in order to achieve optimal results.

BC - 055

## TRANSRADIAL CORONARY INTERVENTION ; WHAT IS NEW ?

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Md Mizanur Rahman Majumder, Mahmud Hasan Masum , Bisnu Pada Saha ,  
Farzana Sultana, Md Saqif Shahriar .

Coronary angiography (CAG) and percutaneous coronary intervention (PCI) can be performed via the femoral or radial arteries. The femoral approach had traditionally been the primary approach for most operators. Since the inception of the transradial approach, this route has obtained its popularity around the world as well as in Bangladesh due to less complications & patients safety.

The major advantage of the TRA is the reduction in the incidence of complications related to the site of puncture associated with early ambulation, reduction in hospital stay, and consequently reduction in costs, making way for interventions in an outpatient care regimen. Though it has a long learning curve , still it is preferred by most of the interventionalists in our country. Introduction of newer puncture needle and set, slender vascular access sheaths , use of combo technique during guide catheter manipulation and patent hemostasis technique after TRI procedure reduces the access related & procedural complication. This technique also showed equivalent procedure times and radiation exposure to femoral procedures. Especially in patients with acute coronary syndrome TRI has lower bleeding and vascular complications than transfemoral artery access. All complex coronary interventions like CTO , Left main & complex bifurcation PCI can be done safely through TRI, early

ambulation and patient preference. Same day hospital discharge is also feasible and safe alternative with similar radial artery patency rate and that will reduce the hospital cost and bed occupancy rate in a busy center in Bangladesh. Distal Radial access in anatomical snuffbox is a new & feasible route for coronary intervention showed reduced radial artery occlusion. More than 2000 patients has already been successfully performed CAG and PCI through this route and showed its benefit since December, 2017. A Newer strategy like modified jailed balloon technique in bifurcation PCI has been studied through distal radial route first time in Bangladesh .

Over the last decade, this has led to an exponential rise in the use of the transradial access site, with several potential technical challenges becoming increasingly recognized . However, with greater experience and technological advancement these potential obstacles may be overcome.

**BC - 056**

## **DIFFICULT PATENT DUCTUS ARTERIOSUS FOR DEVICE CLOSURE: HOW TO IDENTIFY AND SUCCEED**

**Dr. I.B. Vijayalakshmi**

**Introduction:** Patent ductus arteriosus (PDA) is seen in approximately 1 in 2000 of term live births accounting for 10– 15% of congenital heart diseases.<sup>1</sup> Percutaneous device closure is widely considered as the treatment of choice for patients with PDA<sup>2,3</sup>. Device closure has evolved to be the procedure of choice and has literally threatened the supremacy of surgical ligation. The evolution of transcatheter PDA closure from just 40 years ago, with 18 F sheaths to device delivery via a 4F sheath is a remarkable journey. The non-surgical transcatheter device closure has revolutionized the management of PDA and has become a safe, effective and very attractive alternative to surgery in most of the centers with almost 100% success rate in most of the patients. A number of types of devices with different delivery techniques have been used. It is anticipated that further improvements will result in better safety and efficacy of trans catheter device closure techniques of PDA. Despite tremendous progress, - to this date, no consensus opinion exists with regard to what type of device is most efficacious and ideal in which cases, especially difficult PDAs. This dilemma is due to the varied morphology of the PDA, associated pulmonary artery hypertension (PAH), coarctation of aorta (COA), which make the device closure challenging. Perhaps there is no single device for all challenging PDAs. Hence the question most often asked is- 'Which device for which PDA?'

### **Selection of Device :**

The selection of either Amplatzer duct occluder I (ADO I), or Amplatzer duct occluder II (ADO II) or Amplatzer duct occluder II additional size (ADO II AS), or Amplatzer Vascular plugs (AVP) or Amplatzer ventricular septal occluder (AVSD O) or Amplatzer atrial septal occluder (AASDO) will depend on multiple factors. In some situations where one/ two or many devices could be suitable. One has to use which the operator is familiar with and the device available in cath lab at that time.

### **Morphologic classification of PDA:**

According to Krichenko's classification there are five types of PDA simply called as Type A when conical, Type B, when PDA is short and window type Type C, when it is long and tubular, Type D is with multiple narrow segments is complex and in Type E the ampulla of PDA is elongated. The diagrammatic and angiographic pictures of all the five types of PDA with choice of device is shown in Box 1. The operator should understand the anatomy, morphology, Type of PDA by both detailed Echo in ductal view and descending aortogram in left lateral (LL) and right anterior oblique (RAO) projections. Measure the narrow end of the duct and Ampulla accurately. If duct is not visualized well in LL projection repeat the angiogram in RAO projection. Still not visualized then one should do the balloon sizing to assess the accurate size of PDA.

## ECHOCARDIOGRAPHIC EVALUATION OF CONGENITAL HEART DISEASE FOR INTERVENTION

**Prof. Dr. ABM Abdus Salam**

**Introduction:** Echocardiography is a magic imaging tool of ultra-sound examination to evaluate the cardiovascular structure and function in depth of its magnitude which helps in details for appropriate case selection for structural intervention. It also guides as a captain during procedure for successful outcome of many paediatric cardiac interventions. It has an important role in post intervention follow-up and identification & management of complications. So, every intervention paediatric cardiologist must acquire the appropriate knowledge and skill of Echocardiography for successful intervention procedure. Common congenital heart diseases where interventional treatment feasible are device closure of PDA, ASD, VSD, A-P Window, Balloon Valvuloplasty or Angioplasty of stenotic defects like PS, AS, CoA including stenting.

**Aim:** To demonstrate how echocardiography delineate interventional suitability of inclusion and exclusion criteria of individual case of congenital heart disease. To demonstrate how echo can help per procedure to implantation of various devices and also to identify the complication following intervention.

**Methods:** Recently device closure of shunt anomaly like ASD, VSD and PDA is an alternative method of treating such congenital heart disease. But all cases are not suitable for device closure due to anatomical variation of each lesion. Echocardiography will sort out these anatomical details. 2D and colour/Doppler study using mostly TTE and in some cases TEE is sufficient for understanding the anatomy as well as the hemodynamic of shunt and peak pressure gradient including pulmonary pressure. For PDA, identify using PSX and high parasternal ductal view, supra/sternal view to measure the diameter of pulmonary and aortic end then the length and morphological type, which are of 5 varieties. All most all type can be closed either with device or coil except large tubular PDA having no constriction. Then use colour flow and Doppler study to measure peak pressure gradient, more the value less the size of PDA. Usually, PDA size less than 2 mm requires coil and larger one device closure. Per-procedural echo can detect any residual shunt requiring upsizing the device before release. For ASD device closure, suitability assessment TTE or in some case TEE is the utmost essential tool for successful implantation of device. Rims of ASD, Secundum, which should be adequate (5 mm) can easily be measured by echo. Sizing of the defect at least three representative views; like 4 C; PSX; Bi-Caval view will be adequate. Per-operatively, TEE guides as the captain particularly in difficult large ASD with some rim deficient case. For VSD device closure, echo also plays important role before, during and post procedure including for follow-up as well as early identification of any complication. Size, location, morphology guiding the appropriate device, distance from aortic valve or moderator band can be carefully assessed by echo to avoid complication. Echo Colour Doppler study is an essential prerequisite for the case selection of pulmonary and aortic balloon valvuloplasty, in which the stenosis should be purely valvular with pliable leaflets without any calcification or vegetation having peak pressure gradient at least 45 mmHg. Balloon selection will be 1.25 times in case PS and 0.8 times in case of AS and Coarctation balloon angioplasty. Per or Post procedural echo can clearly demonstrate the outcome of the Balloon angioplasty and long term follow echo evaluation of peak and mean pressure gradient will guide for further intervention if require along with clinical judgement.

**Conclusion:** Echocardiography is an essential imaging tool for pre, per and post procedural state including follow-up of all kind congenital cardiac interventions.



## **DEVICE CLOSURE IN SHUNT ANOMALY IN CHILDREN" EXPERIENCE IN A BANGLADESHI CENTRE.**

**Nurun Nahar Fatema Begum**

Background: Interventional cardiac catheterizations procedures have proved a significant advance in the non operative treatment of many congenital heart disease. Transcatheter device placement have been successfully used for closure of patent ductus arteriosus (PDA) atrial septal defects (ASD), Blalock Taussig shunt, Aorto-pulmonary window (A-P window) and more recently for ventricular septal defects (VSD). Vascular plugs are also available for arterial and venous embolization.

Incidence of congenial heart disease is upto 25/1000 live birth in our country which is very high comparing to incidence record in other countries. About 48% of the congenital heart disease is contributed by ventricular septal defect (VSD) Atrial Septal Defect (ASD) and Patent Ductus Arteriosus (PDA). As parents and patients are scared about surgery and they do not want any scar on the chest of their child, device closure of these defects gained rapid popularity among patients. We have started device closure of PDA in our country back in 1999. Then ASD device closure was started in 2001 and VSD device closure in 2004.

Objective: Devices required for closing ASD, VSD and PDA are expensive and needs properly trained pediatric cardiology team to have good outcome. Since 1999 lot of successful interventions were done in Combined Military Hospital (CMH) Dhaka. Objective of this study is to show the outcome of this procedures in our country. Another objective is to inform the participants that, a developing country like Bangladesh can complete with other center of the world in term of successful outcome in such a high-tech procedure.

Methods: It is a retrospective study carried out in paediatric cardiology unit of Combined Military Hospital (CMH) and Lab aid cardiac hospital. from sept 1998 to Sept 2019, Dhaka. All the patients who were taken into the cath lab with an intention for device closure were included in the study. Criteria for device closure were checked earlier from detail colour doppler echocardiography study . Patients were prepared for cardiac catheterization as usual. All ASD and PDA, VSD cases were done under sedation and all VSD except five was done under G/A in initial phase.

Results: Total 4593 patients were included in the study. Among them 1420 cases were attempted for ASD device closure. Out of them 1384 (97.46%) cases were successful. VSD device closure was attempted in 712 cases out of which 706 (99.15%) cases were successful. PDA coil/device closure was attempted in 2461 cases and 2428 (98.65%) cases were successfully implanted. Ten cases of device embolization was experienced in both PDA, ASD and VSD series.

In case of PDA 5 cases of coil embolization was experienced which were later retrieved and bigger size device was implanted. Acute intravascular haemolysis was experienced in 3 cases from residual shunt which were later sealed with one or more PDA coil implantation.

All patients were discharged 24 hrs after procedure except VSD cases who were discharged after 72 hrs. No complications were encountered in follow up period.

Conclusion: Device closure of shunt anomalies is an excellent modality of treatment for closing ASD, VSD and PDA . ASD and PDA device procedure is simple and may be done as outpatient basis. These cases are discharged after 24 hours observation period. Some VSD device cases needs 72 hours observations to look for any arrhythmias. Outcome of these interventions are excellent in our center and we never encountered any complications during follow up of these cases.

## **“PEDIATRIC CARDIOLOGIST AND PEDIATRIC CARDIAC SURGEON - ON THE SAME BOAT”**

**Dr Amitabha Chattopadhyay**

When the subject was first elucidated, it appeared that we were discussing some matter which has been taken for granted, some topic which has been settled down a long time back, and the final decisions have already been made – hence no further discussions are neither allowed nor entertained on this topic.

The science of pediatric cardiology is a relatively new offshoot from the age old mainstream cardiology, so called “adult cardiology”. It is always intriguing as to what the people in the trade of pediatric cardiac sciences do.

When a baby walks into the OPD with suspicion of the diagnosis of a congenital heart disease, the surprised and hapless parents usually look up to the pediatric cardiologist for a way to be shown as to the baby’s diagnosis and treatment.

The responsibility of a pediatric cardiologist begins with the antenatal diagnosis of a congenital heart disease in the fetus and planning the delivery at a pediatric cardiac centre. starting cardiac care in the perinatal period itself, starting vital medications in time ( eg prostaglandin, heparin etc.), planning and execution of the treatment protocol, with the help of the pediatric cardiac surgical team, pediatric intensive care team, the anaesthesia team and the nursing and supportive staff.

A wrong anatomical diagnosis, missing vital points – missing LSVC, coronaries crossing RVOT, nonconfluent branch PAs, wrong estimation of branch PA sizes, incorrect estimation of PA pressures – (makes it a difficult physiology for Glenn and Fontan operations), incorrect estimation of reversibility in oximetry caths – thus making postoperative management difficult or resulting in residual pulmonary arterial hypertension, missing anomalous pulmonary venous drainage – resulting in mismatched Qp / Qs ratio, failure to predict or manage arrhythmias – creating chaotic situations in the post operative period, are only a few conditions to mention. Thus , pediatric cardiologists should always be on the highest possible alert to predict such conditions for the smooth passage of the intervention or surgery.

Similarly, the surgical team should also be rational in exercising their judgement and expertise in treating a child with congenital heart disease. Treatment according to the physiological demands, prompt recognition of deviations from the normal expected pathway and taking remedial measures, repeat / redo surgeries if the situation demands, discussing the anatomical and physiological alterations with the cardiologists and intensivists – in the best interests of the patient - makes the team more stronger.

The presurgical echocardiogram forms a sort of prima facie evidence from the pediatric cardiology team depicting the precise diagnosis of the patient, on the basis of which the entire surgery is based. The peroperative echocardiogram should be done preferably by the same person, to attain the highest level of accuracy. In case of any discrepancies, effective corrective measures may be taken to minimise such aberrations in future.

The field of pediatric cardiac interventions is one of the most risky professions, predictive only to a certain limit, and requires tremendous courage, determination, positivity and the ability to think laterally along with innovative ideas on the part of the interventional pediatric cardiologists. Nevertheless, pediatric cardiologists should always be in liaison with the pediatric cardiac surgeons and the team, lest any untoward incident occurs during cardiac catheterisation or interventions.

The procedures should be timed as such, so that the pediatric cardiac surgeon’s case routines are not interfered with, and at the same time, the cardiac surgeon is at the station along with the team of anaesthetists and intensivists, to jump on to the occasion if the need be.

Surgical emergency conditions – low cardiac output states, post operative arrhythmias, managing post operative hypotension / hypertension, managing residual lesions and the physiology created thereof, chylothorax, blocked BT shunt, blocked prosthetic valves, Glenn failure, failing Fontan, preoperative preparations, optimising preoperative conditions, treating pre and post operative infections, are only a few examples of conditions which need a very close coordination between the pediatric cardiologist and the pediatric cardiac surgeon.

In the cath lab, often bail - out situations may need the immediate help of the cardiac surgeon. Cardiac perforations, accidental tears of cardiac valves, acute changes in the physiology – acute MR / acute AR, device embolisations, stent migrations, iatrogenic obstructions – etc may need the patient to be shifted to the operating room immediately and the surgeon may have to operate on as an emergency life saving measure.

Regular joint rounds and joint planning for the patients, with diagrammatic illustrations, available imaging and resources, cardiac catheterisation data, hemodynamic estimations, and angiograms – form the basis of a great cardiac unit. Talking to the parents jointly - so that they are on the same page regarding the patients's management, prognosis, pre and postoperative stabilisation, short and long term management, dealing with possible complications and their management, post operative care, dealing with rehabilitation to meaningful social positions, vocational trainings as applicable , medications and the dosages , what to do in case of emergencies etc. by the pediatric cardiology and the pediatric cardiac surgical teams form the backbone of a successful pediatric cardiac sciences programme.

Responsible and ethical practice holds the key to a successful team dynamics. Lesions which may be amenable to be treated by catheter techniques, defects likely to be closed with a device, lesions which may be opened up with balloons, lesions which may be stented, should be taken up by the interventional pediatric cardiologists. At the same time, there should not be irrational decisions to close lesions where there are contraindications (attempting device occlusions when rims are poor, chances of collateral damage to surrounding structures , VSD device occlusion when there is gross tethering and prolapse of the RCC, not so necessary diagnostic cardiac catheterisations,) thus avoiding gross error of judgement.

In summary, a pediatric cardiologist and a pediatric cardiac surgeon are scheduled to work in tandem with each other, in collaboration, with joint discussions, joint planning and execution of the best possible treatment in the best interests of the patient. Differences of opinion are likely with different possible treatment options emanating from time to time – but the onus is on both the teams to maintain the greatest respect for each other, so that ultimately it is rationality and scientific thinking which remains supreme, for the betterment and advancement of mankind.

## **SOUTH ASIAN DIET AND RISK OF ASCVD**

**Sundeep Mishra**

Heart disease is the leading killer of adults worldwide and South Asians who now represent almost 25 % of world population have a higher death rate from the disease than any other ethnic group. In fact people of South Asian descent, which includes countries like India, Bangladesh, Pakistan, Nepal, Sri Lanka, Bhutan and the Maldives, have four times the risk of heart disease compared to the general population, and they develop the disease up to a decade earlier. A recent study Masala (for Mediators of Atherosclerosis in South Asians Living in America), has found that South Asians tend to develop hypertension, dyslipidemia including and Type 2 diabetes at lower body weights than other groups. Furthermore, South Asian men are also prone to high levels of coronary artery calcium, a marker of atherosclerosis which can be an early harbinger of future myocardial infarction and stroke.

One of the reasons for this worse morbidity and mortality can be attributed to diet. While nearly 40% (Masala participants) of South Asian are predominantly vegetarian (a common practice particularly in India), a diet which is considered heart healthy in West but this vegetarianism is in reality of a different type. Vegetarianism in South Asia involves eating lot of fried foods, sweetened beverages and high-fat dairy products (which is really of animal origin) but poor in fruits, vegetables, nuts, beans and whole grains. Non vegetarians in this region as also in West Asia are fond of red meat like mutton and beef rather than white meat like fish or chicken. In addition a couple of things make it worse for South Asians. In recent times there has been a shift from traditional oils like mustard or groundnut oil (mono-unsaturated – MUFA) to either poly-unsaturated (PUFA) like safflower / sunflower oil, soyabean oil to even cheaper options like vanaspati ghee (trans-fat - TFA) or palm oil (rich in saturated fat). On the other hand there is a 'fad' of using olive oil which is completely unsuited to high heating involved in preparing South Asian foods like curries, which is not only useless but can be even harmful because it gets denatured after crossing its "smoke point." Finally, the South Asian habit of snacking with bhujija, biscuits etc, foods and eating dhaba food all of which are prepared in vanaspati ghee, extremely rich in TFA, a fat which has extremely harmful effects in causing CAD.

## **GUIDELINE BASED MANAGEMENT OF HYPERTENSION**

**Baren Chakraborty, Shudipan Chakraborty**

Hypertension remains the major preventable cause of cardiovascular disease (CVD) and all-cause death globally. Substantial progress has been made in understanding the epidemiology, pathophysiology, and risk associated with hypertension, and a wealth of evidence exists to demonstrate that lowering blood pressure (BP) can effectively reduce premature morbidity and mortality. Coronary Artery Disease (CAD) causes nearly 18 million deaths annually. Despite the phenomenal progress in disease management, 30% of global deaths are attributable to CAD. A number of genetic and acquired risk factors for the development of CAD are identified. Amongst the CAD risk factors, systemic hypertension remains as the leading root cause of excessive premature CAD mortality and morbidity. The consequences of any level of elevated BP are of momentous impact on the public health.

The latest European guidelines retain the previous definition of hypertension (ie, BP >140/90 mm Hg) whereas the American guidelines lowered the threshold to define hypertension to >130/80 mmHg. The American guidelines (proposing new definition of hypertension) are driven largely by meta-analyses of

important outcome trials including SPRINT (Systolic Blood Pressure Intervention Trial). And the European guidelines are assembled largely on the basis of population attributable risk. Yet, both the sets of guidelines recommend the same therapeutic BP goal of <130/80 mmHg. Drug treatment algorithm has been developed to provide a simple and pragmatic treatment recommendation for the treatment of hypertension, based on a few key recommendations. (1) The initiation of treatment in most patients with a Single-pill combination (SPC) comprising two drugs, to improve the speed, efficiency, and predictability of BP control. (2) Preferred two-drug combinations are a RAS blocker with a CCB or a diuretic. A beta-blocker in combination with a diuretic or any drug from the other major classes is an alternative when there is a specific indication for a beta-blocker, e.g. angina, post-myocardial infarction, heart failure, or heart rate control. (3) Use monotherapy for low-risk patients with stage 1 hypertension whose SBP is <150 mmHg, very high-risk patients with high-normal BP, or frail older patients. (4) The use of a three-drug SPC comprising a RAS blocker, a CCB, and a diuretic if BP is not controlled by a two-drug SPC. (5) The addition of spironolactone for the treatment of resistant hypertension, unless contraindicated.

The European hypertension guidelines identify South Asians as the highest risk category and most vulnerable to the consequences of elevated BP. A good number of randomized trials unequivocally documented that South Asians develop CAD at younger age (<40 years) irrespective of their geographic or expatriate status. This situation requires immediate implementation of changes in health care delivery access to the entire population. So, more guideline based aggressive BP reduction is mandatory to prevent unfavorable trends in CAD deaths driven by uncontrolled hypertension.

**BC - 062**

## **DYSLIPIDEMIA IN SOUTH ASIAN POPULATION**

**Abdul Wadud Chowdhury**

The term “South Asian” refers to all people who have ancestral origins in Indian subcontinent. This includes India, Pakistan, Bangladesh, Nepal, Bhutan & Sri Lanka. Incidence, prevalence, hospitalization, morbidity and mortality from Coronary Artery Disease (CAD) among South Asians are 50 to 300% higher than in Europeans, Americans & other Asians regardless of gender, religion or social class. In Bangladesh from 1986 to 2006, age standardized CVD mortality rates increase by 30-fold (from 16 death/100,000 to 483 deaths/100,000) in males and 47-fold (from 7 deaths/100,000 to 330 deaths/100,000) in females.

Early development of malignant atherosclerosis in this population results in premature MI and death with first MI occurring about 7 to 10 years earlier in south Asians compared to Europeans and Americans. The excess burden of CAD among South Asians appears to be primarily due to dyslipidemia that is characterized by high levels of apolipoprotein (apo) B, triglycerides (TG) and lipoprotein (a) [Lp(a)]; and low levels of HDL-C & apo A1 as well as an excess prevalence of DM. A combination of high Lp(a) & low HDL was found in 42% of South Asians. Moreover, the protective effect of HDL is found to be much lower in South Asian population. The landmark INTERHEART study inferred that dyslipidemia appeared to be the strongest contributor of AMI in South Asians with a population attributable risk of 49.2%.

So, South Asians are in double jeopardy from nature & nurture. Nature providing genetically determined low HDL with Lp(a) & TG excess, and nurture contributing through an unhealthy life style associated with affluence, urbanization and mechanization.

## **MITRAL VALVE REPAIR IN CURRENT ERA**

**Dato Seri Dr. Mohd Azhari Yakub**

Mitral valve (MV) repair is preferred over replacement for its numerous benefits that includes preservation of ventricular function, lower operative mortality, superior long-term survival and avoidance of anticoagulation. It has been established that MV repair has excellent durability in patients with mitral regurgitation (MR) caused by degenerative disease. However mitral valve repair is perceived to be of limited durability for advance rheumatic disease in adults. We examine the long-term outcomes of rheumatic mitral repair, identify predictors of durability and to compare with repair for degenerative mitral valves.

Rheumatic and degenerative mitral valve repair in patients 40 years and above were prospectively analyzed. The primary outcomes investigated were mortality, freedom from reoperation and valve failure. Logistic regression analysis was performed to define predictors of poor outcome.

Between 1997 and 2011, 253 rheumatic (Group R) and 148 degenerative (Group D) mitral valves were repaired in patients  $\geq 40$  years old. Freedom from reoperation for rheumatics at 5 and 10 years were 98.4%, comparable to that for degenerative valves at 95.3% ( $p=0.121$ ). Freedom from valve failure for rheumatics at 5 and 10 years were 91.4 % and 81.5%, whereas for degenerative repairs were 82.5% and 75.4% respectively ( $p=0.15$ ). On univariate analysis of variables in the rheumatic group, the presence residual MR  $> 2+$  before discharge was the only significant independent predictor of reoperation; whereas residual MR  $>2+$  and leaflet procedures were significant risk factors for valve failure.

Analysis of two groups of adult patients demonstrated the durability of mitral valve repair in rheumatics is comparable to that for degenerative disease in the present era, with excellent long-term survival, freedom from reoperation and valve failure. Stringent intraoperative quality control remains a determining factor of long-term durability. Modifications of standard repair techniques, adherence to the importance of good leaflet coaptation and strict quality control with stringent use of intra-operative transesophageal echocardiography have all contributed to the improved long-term results.

## **PEDIATRIC CARDIAC SURGERY IN BANGLADESH- PRESENT AND FUTURE**

**M Sharifuzzaman**

Not very long ago there was no place to go for a Newborn to turn up for Open Heart Surgery in this country. In fact this is almost true for all complex congenital heart treatment as a whole.

The picture is different today. We have centres where comprehensive assessment for a wide range of surgery are performed.

Delivering a Narrative for pediatric cardiac surgery will unfair in isolation without considering the stories about relevant subspecialty, Cardiology, Intensive care & Anesthesia ,Perfusion and Critical care nurses. Cannot ignore the change of attitude of society toward care of children with chd.

This discussion covers a birds-eye view of the present status and future direction of pediatric cardiac surgery and the challenges it faces.

## **STATE OF THE ART PRACTICE IN AORTIC SURGERY IN BANGLADESH.**

Prasanta K Chanda,

Aortic diseases are not very uncommon in Bangladesh, a country with more than 160 million people. With such a huge population, treatment of aortic diseases is a very challenging issue, especially when surgical intervention is necessary. In Bangladesh, like many other similar countries, specialized treatment facilities are concentrated in the capital city Dhaka. Though in recent time open heart procedures are also offered outside Dhaka. However, there are extremely few centers in the country that offer complex aortic surgical procedure safely.

In Bangladesh, certain aortic surgical procedures are practiced safely, for instance, aortic root reconstructions like Bentall's procedure. In Bentall's there is replacement of aortic valve and ascending aorta as composite. This procedure was introduced many years back and it is considered as gold standard. Newer procedures like aortic valve sparing procedures (example-David procedure) also introduced. Here, if aortic valve is essentially normal or near normal, then all the aneurysm tissues around valve along with diseased ascending aorta are removed. Through valve sparing root replacement, certain complications like thromboembolism, bleeding, prosthetic valve endocarditis, lifelong anti coagulation therapy and for bio- prosthesis re-intervention can be avoided.

For arch diseases, the center like our centre offers arch replacement in the form of hemiarch replacement with tube graft or total arch replacement with branched graft with or without Elephant Trunk. Recently Frozen Elephant Trunk (FET) is introduced to treat type A aortic dissection and distal arch plus proximal descending thoracic aortic diseases. For descending thoracic aortic pathology or TAAA (Thoracoabdominal aortic aneurysm) open repair still in use. For adult co-arcuation of aorta with cardiac diseases, sometimes single stage surgery like CABG/MVR/AVR with ascending aorta to descending aorta bypass through mid-sternotomy is offered. For congenital supra-avalvular aortic stenosis, Brom's technique is adopted.

The center endeavors to develop endovascular procedure which will help for adopting hybrid approach to treat more complex scenario.

Key wards: Bentall's procedure, David procedure, Elephant Trunk, FET etc.

## **CURRENT TRENDS IN VALVULAR HEART SURGERY IN BANGLADESH**

**Suman Nazmul Hosain**

**Introduction & Objectives:** Valvular heart surgery has a long history in Bangladesh. Even in 1960s some bold and dynamic surgeons attempted operative treatment for rheumatic mitral stenosis in the form of finger fracture. However well organized valvular heart surgery began after formal establishment of the Institute of Cardiovascular Diseases (ICVD). The objective of this study is to figure out the current trends of Valvular surgery in Bangladesh.

**Methods & Material:** Surgical record keeping is usually not well maintained in Bangladesh. Best information often comes from an unusual source like Anesthetists' society or corporate houses.

Bangladesh Association of Cardiovascular and Thoracic Anesthesia (BACTA) compiles and publishes detailed data of cardiac surgery during their annual meeting. The hospitals performing cardiac surgery and representatives of valve manufacturers are contacted for additional information. Data is collected from Indoor patient admission registers, OT record books, ICU datasheets, Out Patient Department registers & electronic recording devices.

Results: In 2018 the total number of isolated valve replacement surgeries recorded in Bangladesh was 837. This is only 8.2% of total 10253 cardiac surgical procedures recorded that year. This is in sharp contrast to the 1990s, when valvular surgeries were enormous majority of the cardiac procedures. This is also a 9.7% reduction from the 2017 figure of 927. Among those 402 were mitral, 283 were aortic and 152 were double valve replacements. In addition a few more valve replacements were done in combination with other surgical procedures. Vast majority of these 989 implanted valves are mechanical prostheses with only a small number of tissue valves. Closed mitral commissurotomies (CMC), once the most common cardiac surgical procedures, are still performed today though in a much smaller number following the introduction of PTMC. Valve repairs traditionally have not been popular in Bangladesh, around 40 repairs were recorded in 2018. The first TAVI in Bangladesh was performed in 2019. 6 transvenous valves have been implanted recently in pulmonary positions.

Conclusion: Valvular cardiac surgical procedures these days are only a small fraction of all the cardiac surgical procedures performed in Bangladesh. Though absolute number of valve replacements has increased, these figures have been outnumbered by the much faster growing coronary and congenital procedures. Valve repairs and transvenous valve implantations are slowly creeping up. With changing demographics and disease pattern the degenerative valve surgery in the elderly are gradually outpacing rheumatic valve surgery in the young patients. The surgeons should prepare with these current changing trends for the future.

BC - 067

## HOW SHOULD I TREAT CORONARY PERFORATION?

**M G Azam, Dr Jafrin Jahan**

Case abstract : A 50 years old male smoker, diabetic, non hypertensive and HBsAg positive patient presenting with typical feature of effort angina with ETT positive. He underwent Coronary angiogram. It revealed DVD (LAD- 80% diffuse lesion from proximal to mid & LCX- 80% stenosis from proximal to mid). LAD long segment lesion was treated with two stent one from mid to distal and another from proximal to mid with overlap. But after putting last stent when we did Post dilation with stent balloon there was sudden leaking of coronary. Patient ECG was changed initially with PVC followed by complete LBBB with unstable haemodynamics. Patient also complained chest pain. We immediately managed with prolonged balloon inflation along with preperation for covered stent with ionotrop support. But perforation sealed only with prolonged balloon inflation in 2-3 occasions and managed successfully



BC - 068

## **PULMONARY ARTERY DENERVATION SIGNIFICANTLY INCREASES 6-MINUTE WALK DISTANCE FOR PATIENTS WITH COMBINED PRE- AND POST-CAPILLARY PULMONARY HYPERTENSION ASSOCIATED WITH THE LEFT HEART FAILURE: PADN-5 STUDY**

**Shao-Liang Chen**

**Background:** Benefits of targeted- pulmonary arterial hypertension (PAH) medications for patients with combined pre- and post-capillary pulmonary hypertension (CpcPH) secondary to left heart failure (HF) are unknown. Pulmonary artery denervation (PADN), which was studied in previous registry study, has not been studied in CpcPH patients using a randomized design.

**Objectives:** We sought to assess the benefits of PADN for CpcPH patients.

**Methods:** Ninety-eight CpcPH patients, defined as mean pulmonary arterial pressure  $\geq 25$  mmHg, pulmonary capillary wedge pressure  $> 15$  mmHg, and pulmonary vascular resistance [PVR]  $> 3.0$  Woods Units, were randomly assigned to receive the sildenafil plus anti-HF medication and sham PADN or PADN plus anti-HF medication. The primary endpoint was an increase in the 6-minute walk distance (6MWD) at the 6-month follow-up. PVR and clinical worsening were secondary points. Pulmonary embolism was safety endpoint.

**Results:** At the 6-month follow-up, the mean increases in the 6MWD were 83 m in the PADN group and 15 m in the sildenafil group (least square mean difference 66 m, 95% confidence interval 38.2~98.8;  $p < 0.001$ ). 1-SD decrease in 6MWD was strongly correlated with clinical worsening ( $p = 0.04$ ). PADN treatment was associated with significant reduction (29.8%) in PVR and less rate (16.7%) of clinical worsening, compared with 3.4% ( $p < 0.001$ ) and 40% ( $p = 0.014$ ) in the sildenafil group. At the end of the study, there were 7 all-cause deaths and 2 embolisms.

**Conclusions:** PADN is associated with significant improvements in hemodynamic, cardiac function, and clinical outcomes. Further studies are warranted to confirm the reduction of CpcPH-related events by PADN.

Clinical trial registration URL: <http://www.clinicaltrials.gov>. Unique identifier: NCT02220335.

BC - 069

## **NANOTECHNOLOGY IN CARDIOLOGY**

**Sundeep Mishra**

Spatially, human attention is focused on meter level and its fractions. Biological matter, encompasses this range and beyond. The usual drug particle size is in the range of  $10^{-4}$ , which is around 10 times larger than RBC, and therefore, it is not surprising that majority of drug is wasted, not only decreasing its efficacy but also leading to its distribution to non-target areas, increasing unwarranted side effects. Nanotechnology attempts to reach this level for more efficient delivery with least side-effects.

As a matter of fact many important properties of nano-particles make them ideal as targeted delivery vehicles:

- Increased adherence to damaged vasculature and endothelium.
- Ability to noncovalently bind to carriers.
- Potentiation of selective carrier uptake by cells or tissue.

Several biological agents like albumin/dextran/perfluorobutane gas microcarriers (PGMCs) nanoparticles can be utilized for cardiac applications. Albumin-coated gas microbubbles have an interesting property, that is, they do not adhere to normally functioning endothelium but can attach to dysfunctional endothelial cells or to extracellular matrix of the disrupted vascular wall, an interaction that could be used not only as a marker of endothelial damage but even drug delivery. The cardiovascular drugs can be incorporated into the microbubbles in a number of different ways, including binding of the drug to the microbubble shell and attachment of site-specific ligands. Perfluorocarbon as a component makes microbubbles sufficiently stable, so that they can circulate in the vasculature as blood pool agents, acting as a carrier of the drug until the site of interest is reached, in this case, damaged/dysfunctional vasculature. The mechanism of this selective adherence involves destruction of the negatively charged glycocalyx protecting the healthy endothelium and binding of microbubbles to activated leukocytes slowly rolling over the damaged endothelial surface.

### **Applications in Cardiology**

#### 1. Interventional cardiology

A number of therapeutic agents have been explored for incorporation into the PGMC-based delivery for preventing restenosis: sirolimus, paclitaxol, and antisense to c-myc.

#### 2. Inflammation in cardiovascular tree

Vulnerable plaque (VP) rupture is the precursor to myocardial infarction. Increased inflammation at VP site has correlated with plaque rupture. New, targeted therapies are now available, which can pacify the local inflammation. Similar kind of therapy can be useful in context of acute coronary syndrome, peripheral vascular disease, or even atherosclerosis.

**BC - 070**

## **CONTROVERSIES IN CARDIAC INTERVENTION - A DROP FROM THE OCEAN OF CONTROVERSY**

### **Md. Abdul kader akanda**

Percutaneous coronary intervention (PCI) has become the mainstay of therapy for the patients with symptomatic occlusive coronary artery disease. Despite continual updates of clinical guidelines, a uniform plan for coronary intervention is yet to be established.

For left main disease with syntax score 22-32, controversies prevail regarding the superiority of PCI and CABG. Again, elective left main PCI without onsite surgery is still a controversial issue. Imaging techniques are also a matter of discussion for left main PCI. Indeed, there is debate on incomplete revascularization.

In many cases, regional variations of practice pattern may create controversy. The economic status of a nation or country sometimes determines the practice pattern. Hence, the approach to a PCI patient in Bangladesh may differ with developed countries like America. The difference can be in terms of technique, choice of stents, procedural equipment, Cath lab facilities etc.

Controversy is and will remain as the integral part of any procedure. We know the international clinical guidelines, but economic status of a nation is one of the determinants of practice pattern. This deviation is a common scenario in Bangladesh, India, Sri Lanka and most of the Asian countries.

**BC - 071**

## **RADIATION HAZARDS AND PROTECTION IN CARDIAC CATHLAB**

**Mohsin Ahmed**

Ionising radiation is a workplace hazard that cannot be detected by the human senses. The catheterization laboratory or cath lab is one such place where ionising radiation is much in use. The cath lab is a closed atmosphere where the working staff (i.e. cardiologists, cardiac technicians, radiographers, nurses and trainees) is at a potential risk to radiation exposure almost on a daily basis. Compared to other departments (radiology, urology, operating rooms, etc.) that also use x-ray equipment, the cardiac cath lab is generally considered an area where exposure to radiation is particularly high. The use of ionizing radiation is associated with a risk of inducing malignant disease and causing skin or eye damage to the patient and the cathlab personnel. The effects of radiation exposure are not apparent immediately but long term consequences can be serious. The last two decades have seen a continuous increase in the frequency of diagnostic and interventional cardiac catheterization procedures. It is paramount that radiation protection in the cath lab must be a matter of primary concern. Strict measures should be taken to avoid any unnecessary radiation exposure not only to medical staff but also to patients. Local guidelines and precautions to prevent radiation hazard should be adhered. Awareness, education and training on radiation hazard, safety and its prevention are needed.

**BC - 072**

## **ECHOCARDIOGRAPHIC ASSESSMENT OF AORTIC VALVE DISEASES FOR CARDIAC SURGERY**

**Md Kabiruzzaman**

Echocardiography is the standard approach for evaluating and following patients with aortic valve diseases and selecting them for operation. For planning of aortic valve surgery it is essential to determine the severity of aortic valve diseases and to find out the measurement of dimensions of Left ventricular outflow tract (LVOT), aortic valve annulus, sinus, sinutubular junction, ascending aorta and arch of aorta, and Echocardiographic imaging allows accurate definition of those structures.

Causes of aortic valve diseases and dilatation of aortic root with or without ascending aorta (proximal part) and dissection of intima can be assessed by Echocardiography.

Smaller aortic annulus (<19mm) may need aortic root enlargement and larger aortic annulus (>30-35mm) may require reduction annuloplasty during surgery.

Dilated aortic root or ascending aorta (e.g., dimension of root /ascending aorta >45mm for bicuspid aortic valve ) requiring valve surgery is indication for prophylactic aortic root or ascending aortic aneurysm resection and replacement with valved-conduit (composite prosthesis containing a mechanical/-tissue cardiac valve enclosed within tubular polyester/Dacron graft) e.g., Bentall's procedure.

Echocardiographic imaging is invaluable for the evaluation of LV hypertrophy and systolic function, with calculation of EF. Occasionally , LV hypertrophy is excessive, and a vertical left ventricular outflow tract myomectomy is required to remove sub-Valvular obstruction during surgery.

Longitudinal systolic strain imaging has emerged as a more sensitive measure of LV function and predicts adverse clinical events.

Detection of associated mitral valve disease is important before surgery.

The combination of pulsed, continuous-wave, and color flow Doppler echocardiography is helpful in determining the severity of aortic valve disease.

Evaluation of AS severity is affected by the presence of systemic hypertension, and reevaluation after blood pressure control may be necessary.

In patients with LV dysfunction and low cardiac output, assessing the severity of AS can be enhanced by assessing hemodynamic changes during dobutamine infusion.

Conclusion : Echocardiography is very essential tool for pre-operative, per-operative and post-operative evaluation of aortic valve surgery. Dimensions and pathological anatomy of aortic annulus, sinus, sinutubular junction and ascending aorta will determine the size of prosthetic valve and also determine whether the particular patient require Bentall's procedure or valve-sparing aortic root replacement e.g., David procedure.

**BC - 073**

## **APPROACH TO A CASE OF WIDE QRS TACHYCARDIA**

**Anil Saxena**

Wide QRS Tachycardia is defined as a rhythm with a ventricular rate of 100/min or more, and a QRS width of 120 ms or more. The importance of Wide QRS tachycardia lies in the fact that about 80% of these are ventricular tachycardia (VT), which is a potentially life-threatening arrhythmia.

The differential diagnosis of a Wide QRS tachycardia includes ventricular tachycardia, and supraventricular tachycardia with aberrancy. In latter, the aberrancy may be functional, or a preexisting aberrant ventricular conduction. Antidromic tachycardia involving accessory pathway presents as a wide QRS tachycardia. In patients with WPW syndrome, any atrial tachycardia may conduct preferentially through the accessory pathway and produce a wide QRS tachycardia.

The clinical presentation of wide QRS tachycardia can be quite variable, ranging from asymptomatic, palpitations, hypotension, syncope, or hemodynamic collapse. Historical features suggesting VT are older patient, known structural heart disease, severe symptoms, or hemodynamic compromise. On the other hand, a younger patient with structurally normal heart, recurrent episodes without hemodynamic collapse suggest supraventricular tachycardia.

### **ECG Diagnosis**

On ECG, AV dissociation, morphology, axis, and width of QRS complex offer important clues to diagnosis of wide QRS tachycardia. Of these, AV dissociation is a hallmark of VT with a specificity approaching almost 100%. VA conduction may often be present during VT, and at times P waves may be difficult to recognize during a wide QRS tachycardia specially when the rate is fast. A positive or negative concordance of QRS complex with absence of RS complexes also establishes the diagnosis of VT.

Extreme axis deviation (-90 to -180 degrees) suggests diagnosis of ventricular tachycardia. Also, presence of The presence of left axis deviation with RBBB morphology tachycardia very strongly suggests VT. Similarly, The presence of right axis deviation with LBBB morphology tachycardia suggests VT. A narrower QRS duration during tachycardia compares with sinus rhythm also points to diagnosis of VT.

### **Evaluation of a patient with wide QRS tachycardia**

After a careful history, physical examination and ECG diagnosis, the patient should be investigated for establishing the etiological diagnosis. The echocardiogram should be done to diagnose various structural disorders of heart, and to ascertain left ventricular ejection fraction (LVEF). Assessment for coronary disease should be done by an stress test and coronary arteriography. Cardiac MRI can be very

helpful in diagnosing myocardial disorders and can uncover treatable diseases like granulomatous myocarditis like sarcoidosis or tuberculosis. Finally an electrophysiologic study may finally establish the diagnosis and mechanism of wide QRS tachycardia. It can also help assess the prognosis of tachycardia, and response to anti-tachycardia pacing.

#### Management of a patient with wide QRS tachycardia

The management of a wide QRS tachycardia depends primarily on the etiology, symptoms, and hemodynamic compromise during tachycardia. The modalities of treatment are pharmacotherapy, catheter ablation, and device therapy. Ventricular tachycardia is in general more malignant and can be potentially life threatening specially in presence of LV dysfunction. The patient should be carefully studied for the risk of sudden cardiac death, and implantable cardioverter defibrillator is the treatment of choice for patients with a high inherent risk of sudden death. If the VT is stable and LVEF is normal with no structural heart disease, catheter ablation can be done with good result. Ablation is particularly suitable for idiopathic VT, post MI VT in presence of preserved LVEF, and bundle branch re-entrant VT.

Drug therapy can be useful in VT in patients who deny catheter ablation, and where risk of sudden death is minimal as in idiopathic VT. In patients with LV dysfunction and in those with already implanted ICD, use of drugs is helpful in reducing the number of ICD shocks in patients with recurrent episodes of VT.

To conclude, wide QRS tachycardia on ECG should alert a physician for a more sinister prognosis compared with a narrow-QRS tachycardia. Such patients should be carefully investigated for a proper diagnosis, and management.

**BC - 074**

### **TO DO OR NOT TO DO**

#### **Khandaker Ayesha Siddika**

Coronary artery disease is highly prevalent in the worldwide also our country. Angiography is the “gold standard” invasive approach for assessing coronary artery disease. But only angiography guided assessment of lesion may be underestimated or overestimated. Intravascular ultrasound and fractional flow reserve help in the proper decision during intervention. Occasionally plaque is not evenly distributed, producing eccentric lumen, conventional angiography may make the artery look more blocked than it really is. With IVUS eccentric shape is clearly shown. Sometimes the plaque pushed deeper into the vessel wall, giving the appearance that the lumen is not significantly blocked. IVUS can measure the area of the blockage, the size of the artery and obtains an accurate percentage of narrowing. Vulnerable plaque cannot be visualized by using standard angiography, that is easily seen by IVUS. IVUS is done in addition with angiography to assist in the selection and sizing of stents and balloons, to confirm accurate stent placement and optimal stent deployment. FFR is a “Gold Standard” reliable physiological parameter to determine the functional significance of coronary stenosis. FFR is done to validate or justify the needs for PCI. FFR is complement with CAG, especially in patients with coronary stenosis of 50 – 90% or multivessels diseases, as there is frequent mismatch between angiography and haemodynamic severities of coronary stenosis. IVUS versus angiography alone guided PCI reduced overall MACE including early and late stent thrombosis, restenosis, MI and mortality. IVUS & FFR are an important aid to perform PCI in patients with angiographically significant coronary lesion, and to avoid inappropriate stenting, reduce financial burden and unwanted effects of inappropriate stenting.

## **LEFT MAIN & LAD/DIAGONAL BIFURCATION LESION: WHAT SHOULD BE THE STRATEGY?**

**Md Shamsul Alam, Tamzeed ahmed, AHM Waliul Islam, Mahmood Hasan Khan**

### **Clinical Information**

**Patient Initial or Identifier Number. Mr. M. S. I, 58 years Male**

Relevant Clinical History and Physical Exam. Mr. M. S. I, 58 yrs old Bangladeshi gentleman admitted with the primary aim to undergo CAG to evaluate his coronary artery status who has been complaining of exertional chest pain. The patient was haemodynamically stable. He is a known case of Old Inferior MI with S/P PCI to RCA & LCX. CAD risk factors are Ex-smoker with Positive family history of CAD.

Relevant Test Results Prior to Catheterization. HB: 12.7 gm/dl, TLC: 8320, Platelets: 227, Creatinine: 0.92 mg/dl, Na: 137 m mol/L, K: 3.9 m mol/L, ECG: Old inferior MI, Echo: RWMA (+), LVEF: 35-40%.

Relevant Catheterizations Findings: LM: Free of disease,

LAD: 80 ostial lesion, DG1: 70-80% ostial lesion, DG1 got 50-60% ostial lesion.

LCX & RCA stents are patent.

### **Interventional Management**

Procedural step. LCA was engaged with the guide catheter XB-3.5 (7F). LAD lesion was crossed with Sion blue wire: another wire kept in DG1 & Pre dilatation was done with 2.0 mm x 15 mm balloon at 08-18 ATM. LM-LAD lesion was stented with a 3.0 mm x 40 mm stent (Orsiro) at 10-12 ATM. Post dilatation was done with 4.0 mm x 10 mm balloon at 14-18 ATM. Final angiogram showed LAD was well dilated with TIMI-III distal flow. After stenting in LM-LAD, IUVS study was done which showed stent is well apposed with clear bifurcation areas.

**Conclusions.** Post procedural stay in hospital of the patient was symptom free & uneventful. The patient was discharged on day 3 with great satisfaction of the patient as well as the patient party.

This case showed that SB is stented only if clinical symptoms and/or angiographic or adjunctive feature warrant intervention

BC - 076

## ADVERSE IN-HOSPITAL OUTCOME OF TRANSRADIAL PCI IN COMPARISON TO TRANSFEMORAL PCI IN NSTEMI PATIENTS DURING INDEX HOSPITALIZATION – A SINGLE CENTER STUDY IN BANGLADESH

Ahmed Mamunul Huq, Mir Jamal Uddin, Abdul Momen, Pradip Kumar Karmakar, Mustafizul Aziz Mohammad Arifur Rahman, Iftekhar Alam, Jamil Toufiq Imam, Masum Miah

**Background:** NSTEMI patients, in comparison to STEMI patients, are more at risk of bleeding, access site complication and MACE after PCI during index hospitalization. Because they get multiple adjuvant antithrombotic agents before PCI than does the STEMI patients undergoing primary PCI. Transradial access (TRA) is proven to decrease those adverse in-hospital outcomes compared to transfemoral access (TFA) in STEMI patients. But very few studies were conducted in this regard considering NSTEMI patients. **Method:** We observed prospectively the adverse in-hospital outcomes of total 180 NSTEMI patients who had undergone PCI through TRA (group I = 80) and TFA (group II = 100) during index hospitalization between October, 2017 to September, 2018 in NICVD. We have excluded NSTEMI patients with history of previous MI, CABG and PCI, type C coronary artery lesion, acute heart failure, cardiogenic shock and severe comorbidities at presentation. Samples were selected purposively. Patients were followed up 2 hours after PCI and thereafter every day until discharge. **Results:** Demographic and risk factor variables were almost same in both groups. TRA, compared with TFA, yielded less major bleeding (0% versus 3%,  $p=0.12$ ) which was statistically non-significant. Minor bleeding was significantly less in group I (2.5% versus 13.0%,  $P=0.04$ ). Overall bleeding was also significantly less in group I (2.5% and 10.0%;  $P=0.002$ ). Access site complication was non-significantly less in group I (0% versus 1%,  $p=0.91$ ). TRA caused non-significant reduction in MACE (2.5% versus 5%;  $P=0.38$ ) but significant reduction of total adverse in-hospital outcome (5% versus 20%,  $p=0.006\%$ ).

**Conclusion:** In this study TRA seems to have less adverse in-hospital outcome than TFA in NSTEMI patients undergoing PCI during index hospitalization.

BC - 077

## ASSOCIATION OF ECHOCARDIOGRAPHIC EPICARDIAL FAT THICKNESS WITH THE ANGIOGRAPHIC SEVERITY OF CORONARY ARTERY DISEASE IN PATIENTS WITH ACUTE CORONARY SYNDROME

Md. Azizur Rahaman Majumder, Md. Afzalur Rahman, Abdul Momen, Tariq Ahmed Chowdhury, Mohammad Arifur Rahaman

**Background:** Estimation of visceral adipose tissue is important as it carries high cardiometabolic risk and several methods are available as its surrogate. Epicardial Fat Thickness (EFT) is a direct measure of visceral fat rather than anthropometric measurements. EFT can be accurately measured by two-dimensional (2D) echocardiography. It tends to be higher in patients with Acute Coronary Syndrome (ACS).

**Objectives:** The present study was intended to find out the association between echocardiographic EFT and severity of Coronary Artery Disease (CAD) in patients with ACS.

**Methods:** This cross-sectional observational study was carried out in the Department of Cardiology, National Institute of Cardiovascular Diseases (NICVD), Dhaka, Bangladesh over a period of one year

from october 2017 to september 2018. A total of 164 patients was enrolled in the study, prospectively examined EFT on echocardiography and patients were divided into 2 groups, Group-I patients with EFT > 4.65 mm and group-II patients with EFT ≤4.65 mm. Coronary angiograms were analyzed for the extent and severity of CAD using Gensini score.

**Results:** The mean EFT (mm) was found  $6.1 \pm 1.0$  in Group-I and  $3.5 \pm 0.7$  in Group-II ( $p < 0.001$ ). Patients with a higher EFT were associated with a high Gensini score (Group-I vs. Group-II,  $50.3 \pm 24.1$  vs.  $21.9 \pm 20.0$ ;  $p < 0.001$ ). Multivariate analysis showed that EFT (OR 6.07,  $p < 0.001$ ) and smoking (OR 2.66,  $p = 0.03$ ) were independent factors affecting significant coronary artery stenosis. By ROC curve analysis, EFT > 4.65 mm predicated the presence of significant coronary stenosis by 76.1% sensitivity and 69.9% specificity.

**Conclusions:** EFT measured using Transthoracic Echocardiography (TTE) significantly correlates with the severity of CAD. It is sensitive, easily available, and cost-effective and assists in the risk stratification and may be an additional marker on classical risk factors for CAD.

BC - 078

## COMPARISON OF RISK FACTORS BETWEEN YOUNG AND OLDER PATIENTS PRESENTING WITH ACUTE MYOCARDIAL INFARCTION

Sharadindu Shekhar Roy, AKM Monwarul Islam, Md. Afzalur Rahman, Mohammad Arifur Rahman, Farhana Ahmed

**Background:** Acute myocardial infarction is less frequent in young adults than in older individuals. In recent years, the rate of acute myocardial infarction in young adults has begun to rise. Evidence reveals that increased cardiovascular risk starts to develop at young age.

**Objectives:** This study was aimed to compare the risk factors between young and older patients presenting with acute myocardial infarction.

**Methods:** The cross-sectional study was done in the Department of Cardiology, National Institute of Cardiovascular Diseases, Dhaka, Bangladesh over a period of two years (from July, 2016 to June, 2018). We included 524 patients presenting with acute myocardial infarction (STEMI and NSTEMI). The patients were divided into young and older groups considering age. Age ≤ 55 years was considered as young and age >55 years was considered as older. Demographic, clinical, and laboratory data for the risk factors of all included patients were analyzed to compare between two groups. **Result:** Out of 524 patients, 167 (31.8%) were young and 357 (68.2%) were old. Compared to those in the older group, the young patients were more likely to be male (80.2% vs. 61.2%,  $p < 0.001$ ), have a higher BMI (mean BMI =  $26.4 \pm 3.8$  kg/m<sup>2</sup> vs.  $24.1 \pm 2.1$  kg/m<sup>2</sup>,  $p = 0.02$ ), a higher waist circumference (mean WC =  $92.7 \pm 6.1$  cm vs.  $86.8 \pm 3.9$  cm,  $p = 0.04$ ) and have family history of premature coronary artery disease (45.8% vs. 34.1%,  $p = 0.01$ ). Current smokers were found more in young group than in older group (71.8% vs. 60%,  $p = 0.007$ ). On the other hand, older patients were more likely to have hypertension (40.8% vs. 68.4%,  $p < 0.001$ ), diabetes (57.8% vs. 67.3%,  $p < 0.001$ ) and dyslipidemia (20.6% vs. 35.7%,  $p < 0.001$ ).

**Conclusion:** The young patients presenting with acute myocardial infarction have different risk factor profile compared to the older patients with smoking, obesity, presence of family history of premature coronary artery disease and male sex being particularly prevalent in the young. Diabetes, hypertension and dyslipidemia were found to be more prevalent in older patients.

**Key words:** Risk factors, Myocardial infarction, Young adults, Old age.



## IMPACT OF ADMISSION BLOOD GLUCOSE ADDED ON GRACE RISK SCORE FOR ALL-CAUSE IN-HOSPITAL MORTALITY IN PATIENTS WITH ACUTE CORONARY SYNDROME

**Md Mesbahul Islam, Mohammad Ali**

**Background:** Abnormal glucose metabolism is a predictor of worse outcome after acute coronary syndrome (ACS). However, this parameter is not included in risk prediction scores, including GRACE risk score. We sought to evaluate whether the inclusion of blood glucose at admission in a model with GRACE risk score improves risk stratification. **Objectives:** To assess whether inclusion of admission blood glucose in a model with GRACE risk score improves risk stratification of ACS patients admitted in a tertiary hospital of Bangladesh.

**Methods:** This cross sectional comparative study was carried out in the department of cardiology, Dhaka Medical College Hospital (DMCH), Dhaka between May 2016 to April 2017. Data were collected from ACS patients admitted at CCU, DMCH who fulfilled inclusion and exclusion criteria. GRACE score was calculated for each patient. The predictive value of death by GRACE score was compared with the predictive value of combined GRACE score + admission blood sugar. Comparison between these results in two groups were done by unpaired t-test, analysis was conducted SPSS-22.0 for windows software. The significance of the results was determined in 95.0% confidence interval and a value of  $p < 0.05$  was considered to be statistically significant.

**Results:** A total of 249 cases of ACS patients were selected. Most of the patients belonged to 5<sup>th</sup> and 6<sup>th</sup> decades 25.3% vs 37.3% and the mean age was  $55.7 \pm 11.7$  years. Most of the patients were male. High GRACE risk score ( $\geq 155$ ) and elevated admission blood sugar ( $\geq 11$ ) was found significantly higher in-hospital death whereas only high GRACE risk score ( $\geq 155$ ) and normal admission blood sugar ( $< 11$ ) was found non significant regarding in-hospital death. Test of validity showed sensitivity of GRACE risk score regarding in-hospital death was 85.29%, specificity 57.7%, accuracy 61.4%, positive and negative predictive values were 24.2% and 96.1% respectively. The sensitivity of GRACE risk score + admission blood sugar regarding in-hospital death was 85.29%, specificity 62.33%, accuracy 65.46%, positive and negative predictive values were 26.36% and 96.4% respectively. Receiver-operator characteristic (ROC) were constructed using GRACE score and GRACE score + admission blood sugar of the patients with in-hospital death, which showed the sensitivity and specificity of GRACE score for predicting in-hospital death were found to be 79.4% and 58.1%, respectively. Whereas after adding admission blood sugar value to GRACE score both the sensitivity and specificity increased to 82.4% and 58.6% respectively in this new model. Logistic regression analysis of in-hospital mortality with independent risk factors showed GRACE score ( $\geq 155$ ) + admission blood sugar ( $\geq 11.0$  mmol/l) was more significantly associated with in-hospital mortality ( $P = 0.001$ , OR = 6.675, 95% CI 2.366-13.610).

**Conclusion:** In patients with the whole spectrum of acute coronary syndrome admission blood glucose can add prognostic information to the established risk factors with the GRACE risk score.

**Keywords:** Admission blood glucose, GRACE risk score, acute coronary syndrome.

BC - 080

## **ROLE OF INTRA-ARTERIAL NITROGLYCERIN (POSTPROCEDURAL, PREHEMOSTASIS) TO REDUCE RADIAL ARTERY OCCLUSION AFTER TRANSRADIAL CATHETERIZATION: A DOPPLER-GUIDED STUDY"**

**Dewan Mohammad Karimul Islam**

**Background:** Radial artery occlusion (RAO) is now a major concern in transradial approach (TRA). RAO limits future radial artery use for further TRA, for use as a conduit during CABG, for invasive hemodynamic monitoring and for creation of arteriovenous fistula for hemodialysis in CKD patients through same vascular approach. Vascular Doppler examination is the most accurate method for evaluation of RAO.

**Objectives:** To evaluate efficacy of Intra-arterial nitroglycerin through the sheath at the end of a transradial procedure to preserve the patency of the radial artery.

**Methods:** This prospective observational study was done in the Department of Cardiology, NICVD from May-2017 to April-2018, by including a total 200 patients undergoing coronary procedures (CAG and/or PCI) through TRA. RAO was defined as an absence of antegrade flow or monophasic flow or invert flow on Doppler study. In this study 102 patients (Case, Group-I) received 200 mcg intra-arterial nitroglycerine, prior to trans-radial sheath removal. Another 98 patients (Control, Group-II) did not receive intra-arterial nitroglycerine prior to trans-radial sheath removal. Evaluation of radial arterial blood flow by colour Doppler study was done on next day after the procedure in both groups.

**Results:** Results of our study in which RAO was determined by vascular doppler study showed that frequency of radial artery occlusion were 13.5% one day after transradial coronary procedures. We found the incidence was 8.8% Vs 18.4%, ( $p = 0.04$ ) in group I and group II respectively. The incidence of RAO was significantly lower in post procedural nitroglycerine group. From multivariate logistic regression analysis diabetes mellitus ( $p=0.02$ ), hemostatic compression time for more than 02 hours after sheath removal ( $p < 0.001$ ), and procedure time ( $p = 0.02$ ) was predictors of RAO.

**Conclusion:** The administration of nitroglycerin at the end of a transradial catheterization, reduced the incidence of RAO, as shown by 1 day after the radial procedure by Doppler ultrasound. **Keywords:** Radial artery occlusion (RAO), Transradial approach (TRA), Coronary procedure (CAG and/or PCI)

BC - 081

## **ASSOCIATION OF CHA2DS2-VASC-HS SCORE WITH ADVERSE IN-HOSPITAL OUTCOMES IN PATIENTS WITH NON-ST SEGMENT ELEVATION MYOCARDIAL INFARCTION**

**Poppy Bala**

**Background:** Early detection of patients with non-ST segment elevation myocardial infarction (NSTEMI) who would suffer from adverse in-hospital outcomes is important for the therapeutic decision. Recently it was described that CHA2DS2-VASc-HS and CHA2DS2-VASc score is a predictor for severity and adverse in-hospital outcomes in patients with stable coronary artery disease (CAD) and acute coronary syndrome. The aim of the study was to assess the accuracy of the CHA2DS2-VASc-HS score predicting adverse in-hospital outcomes in NSTEMI patients. **Objective:** The aim of this study was to assess the predictive value of CHA2DS2-VASc-HS score for adverse in-hospital outcomes after NSTEMI.

**Methods:** 120 patients with NSTEMI were enrolled in this study in the Department of Cardiology, NICVD, Dhaka from September, 2016 to September, 2017 after considering inclusion and exclusion criteria. The CHA2DS2-VASc-HS score was calculated. The study subjects were divided into two groups according to the CHA2DS2-VASc-HS score. Patients' score >4 were put into group I and score ≤ 4 into group II. They were treated as per hospital treatment protocol and followed-up for adverse in-hospital outcomes (Heart failure, cardiogenic shock, recurrent ischemic pain, significant arrhythmia and death).

**Results:** It was observed that, patients with CHA2DS2-VASc-HS score >4 had more adverse in-hospital outcomes than CHA2DS2-VASc-HS score ≤ 4 (20% vs 3.3%, p=0.01). Group I patients developed cardiogenic shock 10%, heart failure 4%, recurrent ischemia 11.7%, significant arrhythmia 1.7% and death 1.7% than group II patients (1.7%, 3.3%, 3.3%, 0% and 0% respectively). By risk measurement, CHA2DS2-VASc-HS score >4 emerged as a risk factor for developing adverse in-hospital outcome (Relative risk=6).

**Conclusion:** CHA2DS2-VASc-HS scoring system involves only clinical parameters. NSTEMI patients with high CHA2DS2-VASc-HS score have more adverse in-hospital outcomes. This score can be used as a predictor of adverse in-hospital outcomes.

BC - 082

## ASSOCIATION OF PROLONGED $T_{\text{PEAK-TO-END}}$ AND INCREASED $T_{\text{PEAK-TO-END}}/\text{QT}$ RATIO WITH MALIGNANT VENTRICULAR ARRHYTHMIAS IN ACUTE ANTERIOR ST-SEGMENT ELEVATION MYOCARDIAL

Abeeda Tasnim Reza

**Background:** Prolonged  $T_{\text{peak-to-end}}$  & increased  $T_{\text{peak-to-end}}/\text{QT}$  ratio on 12 lead surface electrocardiogram (ECG) have been shown to be the predictors of arrhythmogenesis in various cardiac disorders. There is limited data regarding association of these two parameters with malignant ventricular arrhythmias (MVA) in acute ST-segment elevation myocardial infarction (STEMI) patients.

**Objectives:** This study was conducted to evaluate association of prolonged  $T_{\text{peak-to-end}}$  and increased  $T_{\text{peak-to-end}}/\text{QT}$  ratio with MVAs in acute anterior STEMI.

**Methods:** 178 patients with acute anterior STEMI admitted within 12 hours of onset of chest pain into the Coronary Care Unit, Department of Cardiology, National Institute of Cardiovascular Diseases, Dhaka, were enrolled from November 2015 to October 2016.  $T_{\text{peak-to-end}}$  and  $T_{\text{peak-to-end}}/\text{QT}$  ratio were calculated from surface ECG at the time of admission. The patients were divided into two groups, group I and II according to normal ( $\leq 0.25$ ) and increased  $T_{\text{peak-to-end}}/\text{QT}$  ratio ( $> 0.25$ ). Each groups were subdivided into group Ia & Ib and IIa & IIb on the basis of normal ( $\leq 100$  ms) and prolonged  $T_{\text{peak-to-end}}$  ( $> 100$  ms), respectively and were monitored for development of MVAs for the first 48 hours of myocardial infarction.

**Results:** MVAs were significantly higher in group II than group I (19.5% vs 3.1%, p<0.001), among them 3.1% were in group Ia, 1.2% in group IIa and 18.3% in group IIb. Multivariate regression analysis showed significant association (p=0.013 vs. p=0.002) of prolonged  $T_{\text{peak-to-end}}$  and increased  $T_{\text{peak-to-end}}/\text{QT}$  ratio with MVAs (Odds Ratio, 1.654 vs. 3.845). Receiver operating characteristic (ROC) curve analysis showed that  $T_{\text{peak-to-end}}/\text{QT}$  ratio <0.25 and  $T_{\text{peak-to-end}} < 100$  ms had a negative predictive value of 96.88% and 95.88%, respectively for the prediction of MVAs.

**Conclusion:** The study demonstrated that there was significant association of prolonged  $T_{\text{peak-to-end}}$  & increased  $T_{\text{peak-to-end}}/QT$  ratio with malignant ventricular arrhythmias in acute anterior STEMI patients. Thus analysis of 12 lead surface ECG on admission may help predict malignant ventricular arrhythmias in the first 48 hours of acute anterior myocardial infarction and close monitoring with prompt management may be ensured in high risk patients.

**Key words:** Acute anterior ST-segment elevation myocardial infarction, malignant ventricular arrhythmia,  $T_{\text{peak-to-end}}$ ,  $T_{\text{peak-to-end}}/QT$  ratio.

BC - 083

## FACTORS ASSOCIATED WITH DELAYED ARRIVAL OF PATIENTS PRESENTING WITH ACUTE MYOCARDIAL INFARCTION.

C.M. Kudrat-E-Khuda

**Background:** Delayed arrival of patients to hospital in response to acute myocardial infarction (AMI) symptoms is well documented in the USA and Europe, but little is known about it in Asian countries including Bangladesh, where cardiovascular disease is increasing.

**Objective:** We conducted an observational study to examine extent of, and factors associated with, delay in seeking medical care in 385 patients presenting with AMI in the department of Cardiology of Dhaka Medical College Hospital, Dhaka, Bangladesh.

**Methodology:** Patients were interviewed with a preformed questionnaire within 72 hours of hospital admission.

**Results:** approximately 48% of patients with AMI presented to the Coronary Care Unit (CCU) of Cardiology department within 12 hours of the onset of AMI symptoms and only around 16% of patients arrived at CCU within 3 hours of onset of symptoms. Significant portion (20%) of patients with acute myocardial infarction presented to CCU after 24 hours of onset of symptoms. Male, younger and Muslim patients were more likely to present for hospital care sooner. Whereas no differences observed in married or unmarried patients to seek CCU support earlier or later. Patients coming from upper middle class of socioeconomic status and those with college or post college level of education were more likely to present earlier for hospital care. Pre hospital delay was larger in non manual worker patients as well as in patients with onset of chest pain at home and at rest. Pre hospital delay was shorter in patients with onset of chest pain between 6 am and 12 pm. Lack of awareness, long distance and mode of transport also played vital roles to make delayed arrival of patients presenting with AMI to the hospital.

**Conclusion:** Maximum number of patients arrived at hospital later than the recommended time of less than 3 hours, which reduced the benefit from reperfusion therapies. The results of this study demonstrate that a large proportion of patients continue to exhibit prolonged delay in seeking medical care after coronary symptoms and remain in need of targeted educational efforts to reduce extent of delay.

**Key words:** Pre hospital delay, Acute Myocardial Infarction.

BC - 084

## CLOPIDOGREL RESISTANCE IN PATIENT UNDERGOING PERCUTANEOUS CORONARY INTERVENTION (PCI): A SINGLE CENTER EXPERIENCE IN APOLLO HOSPITALS DHAKA

Azfar H Bhuiyan, Ahm Waliul Islam, Shams Munwar, Aqm Reza, Shahab Uddin Talukder, Tamzeed Ahmed, Mizanur Rahman Kazi Atiqur Rahman

**Background:** Dual antiplatelet (DAPT) treatment with Clopidogrel and Aspirin after PCI is common practice for the interventionist to prevent thrombotic event after coronary stent placement. In spite of this, a significant number of thrombotic events still occur.

Exact data on our population regarding the thrombotic events after successful PCI and uses of DAPT not yet available. Therefore, we have carried out this study to see sensitivity resistance in our population by measuring Clopidogrel resistance test (CYP2C19 assay).

**Methods:** Total 311 patients have been enrolled in this observation non-randomized prospective cohort. The patient who had a single-center PCI at our center or elsewhere, and on Clopidogrel with Aspirin, were selected for the study. Clopidogrel resistance was measured by CYP2C19 assay at our hospital molecular lab.

**Results:** Among the 311 patients, male 252 and female 59. The average age for the male: female was 59:61 years. Clopidogrel resistant test was performed by Real-Time PCR. Total 176 (56.6%) patients are Clopidogrel resistant or positive and 135 (43.4%) patients are Negative. Among the resistant case, 26 (8.4%) patients are Homozygous Positive with probable genotype CYP2C19\*2 (\*2/\*2) and 150 (48.2%) patients were Heterozygous positive with probable genotype CYP2C19 (\*1/\*2).

BC - 085

## PATTERN OF DISEASE AMONG PATIENTS ATTENDING CARDIOLOGY OUTPATIENT DEPARTMENT OF A PRIVATE HOSPITAL OF MYMENSINGH, BANGLADESH

Gobinda Kanti Paul

**Background:** Epidemiologic transition is taking place in every part of the world. Cardiovascular diseases became the most common cause of death accounting for 30% of deaths worldwide, with 80% of the burden now occurring in developing countries.

**Objective:** The objective of the study was to assess the Pattern of disease among patients attending Cardiology outpatient department of a private hospital.

**Methods:** The cross sectional descriptive type of observational study was conducted among 550 patients attending Cardiology outpatient department (COPD) of Sodesh Hospital, Mymensingh, Bangladesh during the period of March 2016 to June 2016. All the new patients attending COPD of Sodesh Hospital were selected purposively for the study. Data were collected by interview, physical examination and laboratory investigations of patients using a case record form. **Results:** Mean age of the patients was 45.1 years with a SD of 15.6 years. Among the patients male were 291 (52.9%), a bit higher than the female 259 (47.1%). It was observed that more than half of the patients (281, 51.1%) visited cardiologist with non-cardiac problems. Less than one third of the patients (169, 30.7%) attended with cardiac problems and 100 (18.2%) patients visited with both cardiac and non-cardiac

problems. Among the cardiac diseases and symptoms hypertension was on the top of the list 176 (65.4%). Ischemic heart diseases was present in 35 (13.0%) and palpitation was in 30 (11.1%) patients. On the other hand among the non-cardiac diseases or presentations, 121 (43.1%) patients had non-specific chest pain, 63 (22.4%) had shortness of breath and 17 (6.1%) had diabetes mellitus. **Conclusion:** Hypertension was found the most frequent cardiovascular disease (65.4%) followed by ischemic heart disease (13.0%). More than half (51.1%) of the patients visit cardiologist with non-cardiac problems. Screening at the level of general practitioner (GP) and appropriate referral system can reduce extreme burden of patients to the cardiologists in the Cardiology outpatient department.

BC - 086

### 3D MAPPING AND ABLATION OF INCESSANT ATRIAL TACHYCARDIA

**Asif Zaman Tushar**

**Introduction:** Atrial tachycardia is a rare form of supraventricular tachycardia, accounting for about 10-15% of patients presenting to experienced arrhythmia centres for radiofrequency catheter ablation. The mechanism may be either focal due to increased or abnormal automaticity or triggered activity, or macro re-entrant. When incessant tachycardia is present, tachycardiomyopathy may develop. The efficacy of antiarrhythmic drugs for long-term management of atrial tachycardia is not very rewarding. Class IC or class I agents may be used in re-entrant atrial tachycardia, and verapamil, beta-blockers or class IC agents in the focal type. If these drugs fail, amiodarone may be tried. Experience with Radiofrequency catheter ablation of atrial tachycardia has success rates between 80% and 95%, with an acceptably low recurrence and complication rate. Thus, radiofrequency catheter ablation should be therapy of first choice for atrial tachycardia when this arrhythmia is not easily and effectively controlled by drugs.

**Case summary:** Mrs. X, 40 years female, non hypertensive, non diabetic, admitted to NICVD with the complaints of palpitation for 3 months. On examination, Her pulse was 146/min and it was regular, blood pressure 100/80 mm hg, lung bases were clear, 12 lead ECG revealed regular narrow complex tachycardia with heart rate 150/min. Echocardiography revealed no regional wall abnormality with good left ventricular systolic function (EF-65%). Subsequently patient underwent electrophysiology study which revealed focal left atrial tachycardia. 3D electroanatomic mapping was done with RHYTHMIA mapping system and successful ablation was done and patient became symptom free. 12 lead ECG was done post operatively and after 1 month follow up which revealed no recurrence.

**Take home message:** Noncontact mapping successfully demonstrate precise locations and electrophysiologic characteristics of origin and preferential conduction of focal AT. Focal AT originates from a small area, conducts through a preferential area, and spreads out to the whole atrium. Application of RF energy on origin or proximal portion of preferential conduction was effective in eliminating focal atrial tachycardia.

BC - 087

## INTERVENTION IN ACS “SOONER IS BETTER” IS THE GOLDEN RULE

Chayan Kumar Singha<sup>1</sup>, Rosul Amin<sup>2</sup>

Evidenced suggests that intervention in ACS “sooner is better” is the golden rule as it carries a better outcome. We report a case that demonstrates lot of sufferings and even fear of death can always persist if proper treatment could not achieved at particular time. A 48- year-old diabetic, hypertensive, obese, smoker patient presented to us with history of NSTEMI 1&1/2 year back. After that he frequently experienced ischemic chest pain (CCS III/IV) dyspnea (NYHA II/III) & palpitation on minimal exertion for which he was hospitalized at 3 times and each time he was counseled for interventional treatment if required. Within this he developed mild LV systolic dysfunction & LVEF was 45%. At last he was convinced to do coronary angiogram and that was 1&1/2 years later of his first event which revealed DVD (critical stenosis in RCA & CTO in LCX). Meanwhile 3 months later of his CAG he underwent angioplasty. At first we approach into RCA and deployed 2 DES after adequate predilatation followed by optimum post dilatation was done by NC balloon. Then we proceed to LCX and deployed a DES after negotiation the lesion with intermediate run-through PTCA wire with sequential dilatation of the lesion by different sized compliant balloon. Total procedure was uneventful and on subsequent follow up patient was quiet good and improved his LVEF from 45% to 50%.

**Key words:** ACS, Early intervention, Better outcome

BC - 088

## HOW DID I APPROACH CORONARY BIFURCATION ISR??

M G Azam, Shekhar Kumar Mondal, Shekhar Kumar Mondal

A 53 years old male with CSA with DM with Positive ETT underwent CAG which showed Total occlusion of LAD with retrograde from Right side.. also proximal disease in D1. We approached the CTO with antegrade approach with PILOT 150 and successfully passed the wire. After pre dilation the lesion looks like MEDINA 1 1 1. We put two stent one in D1 and another in LAD as V stent technique. Result was good. But after 1 month he again complained chest pain. We underwent repeat angio which showed ISR in both proximal D1 stent and LAD stent. We treated with POBA with Kissing balloon inflation and final result was satisfactory.

BC - 089

## BIFURCATION PCI: WHAT AND HOW?

Shahab Uddin Talukder, Mahmood Hasan Khan

**Patient Profile:** Mr. RK, 62 years normotensive, non – diabetic, dyslipidaemic with positive family history of coronary artery disease got himself with the complaints of effort angina (Class II/III) for a few months now. His ECG showed Old MI (Antero – Septal) with RWMA (+) and LVEF: 45%. He also has H/O PCI to LAD & OM. His re – look CAG showed CAD – SVD with ISR in LAD & Patent stent in OM. For which he was advised PCI to LM-LAD & LCx/ CABG. His Syntax score was 18. Patient and family were not keen on undergoing CABG. They opted for Multi Vessel PCI.

**Strategy:** Our patient... according to the Medina Classification has 1,1,1... We opted for a 2 Stent approach for this lesion. Preferred Choice of Technique was DK Crush.

**Materials:** Right Femoral route with JL 3.5 7F guide catheter was used. 2 Floppy wires were taken. 2.0 x 15 mm & 3.0 x 10 mm balloons for pre-dilation & 4.5 x 10 mm (x2) for post-dilation were also used. 4.0 mm x 23 mm DES for LM – LAD & 3.5 mm x 15 mm DES for LCx were used. After procedure, IVUS was done to assess the stent apposition.

**Conclusion:** DK Crush technique is the preferred technique. We wire the SB twice. We KISS twice! POT is essential. IVUS guidance is mandatory when treating Complex LM & non – LM bifurcation lesions. IVUS guidance leads to lower MACE rates lead by decreased rates of stent thrombosis & target lesion revascularization.

**Keywords:** PCI, Syntax Score, Bifurcation lesion, Medina Classification, Left Main disease, DK Crush, Double stent strategy.

BC - 090

## LUTEMBACHER SYNDROME – IS COMPLETE INTERVENTIONAL SOLUTION POSSIBLE?

Samia Tasneem

A 35 years old lady had moderate MS with large ASD secundum. PTMC done with good outcome with no significant MR and MVA increased to 2.2mm<sup>2</sup>. ASD was closed by a large device 3 weeks after the PTMC. This is probably the first case report of complete intervention in Lutembacher syndrome in Bangladesh.

BC - 091

## PLATELETCRIT: A NOVEL RISK-PREDICTOR OF ACS

Samia Tasneem

**Background:** Platelets play a central role in the pathogenesis of acute coronary syndrome (ACS). Naïve platelets are larger in size and have higher thrombotic activity compared to smaller platelets. Platelet activity can be evaluated with platelet indices. So the plateletcrit (PCT), representing the total platelet mass, may emerge as a marker of prothrombotic state in ACS patient.

**Objective:** The aim of this study was to evaluate the usefulness of plateletcrit in young patients with acute MI and to see whether increase in plateletcrit is associated with increased risk of acute MI.

**Methods:** This hospital based cross-sectional study was conducted in the department of cardiology in DMCH over a period of 1 year. 50 young ( $\leq 40$  years) patients with newly diagnosed acute MI (both STEMI & NSTEMI) presented to ccu in the department of cardiology of DMCH within study period were included as cases. Platelet indices, mainly plateletcrit (PCT), Mean platelet volume (MPV) and platelet count were measured in all these patients with automated blood analyser after admission. The parameters were compared with 50 age and sex matched healthy controls.



**Results:** The mean age of cases was 36.4 years. In young patients with acute MI, the mean platelet count was  $258 \times 10^3/\mu\text{l}$ , the mean PCT was 0.30% and mean MPV was 11.09fl. In the control population, the mean platelet count, mean PCT and mean MPV were  $245 \times 10^3/\mu\text{l}$ , 0.26% and 10.29 fl respectively. In this study, platelet count didn't show any statistically significant difference in young patients with or without acute MI. On the other hand, the results showed significantly higher PCT and MPV in patients with acute MI. It was PCT which was found to have the most significant association with acute MI with odds ratio being 3.89, while it was 2.38 for MPV. Another observation was that a significant positive co-relation between PCT value and serum troponin-I level. It was found that PCT has higher sensitivity and specificity in comparison to MPV.

**Conclusion:** Patients with higher PCT was at higher risk of ACS and more severe myocardial damage. Also plateletcrit levels seem to be an independent marker of acute MI in young patients and may reflect pro-thrombotic state in this specific population. The routine analysis of PCT may be of value as a complementary marker in early acute MI and for risk stratification.

BC - 092

## **ASSOCIATION OF SERUM GGT LEVEL WITH PREMATURE CORONARY ARTERY DISEASE IN TERTIARY LEVEL HOSPITAL IN BANGLADESH**

**Umme Shaila, Manindra Nath Roy, Md Saqif Shahriar**

Coronary artery disease is an increasingly important medical and public health problem and is the leading cause of mortality in Bangladesh. Premature coronary artery disease is defined as the presence of coronary artery atherosclerotic lesion in men < 45 years and women < 55 years, which is increased dramatically in recent years in our country. A number of clinical studies upon patients with coronary artery disease demonstrated that elevated Gamma Glutamyl Transferase (GGT) was positively associated with oxidative and inflammatory reactions contributing to atheromatous plaque formation and thereby leading to premature coronary artery disease (CAD). A cross sectional analytical study was designed with the objective to evaluate the association of serum GGT level with premature CAD. In this study 60 subjects were selected, of which 30 were with premature CAD and 30 were without premature CAD according to CAG. Subjects were enrolled by purposive convenient sampling after fulfilling the inclusion and exclusion criteria. In present study mean age was 46.73 ( $\pm 6.10$ ) years in premature CAD subjects and 43.90 ( $\pm 4.78$ ) years in comparison subjects. Mean ( $\pm$ SD) serum FBG in in study group was significantly higher than in comparison group (  $126.47 \pm 21.52$  mg/dl and  $108.41 \pm 15.40$  mg/dl respectively). Serum lipid profile differ significantly between two groups,  $p < 0.001$ . These values for TC ( $192.74 \pm 19.96$  vs  $172.59 \pm 13.20$ ), TG ( $184.56 \pm 10.32$  vs  $133.94 \pm 10.42$ ), LDL ( $120.62 \pm 20.88$  vs  $100.14 \pm 15.41$ ) and HDL ( $35.15 \pm 4.31$  vs  $44.54 \pm 3.44$ ) were in study group and comparison group respectively. Serum TC, TG ,LDL-C levels were more in study group than comparison group. On the other hand serum HDL-C were significantly lower in premature CAD subjects compared to comparison group. Mean(  $\pm$ SD) serum GGT levels were significantly higher in study subjects ( $53.31 \pm 14.59$ ) compared to control subjects ( $22.51 \pm 11.94$ ). Levels of GGT among premature CAD patients did not differ significantly according to the severity of vessel score (SVD, DVD, TVD). Subjects with premature CAD have higher serum GGT levels than without CAD subjects. Association of GGT with CAD as well as its high diagnostic accuracy suggest the role of GGT as predictive biomarker for assessing premature CAD.

**Key Words:** Gamma Glutamyl Transferase (GGT), Premature Coronary Artery Disease (CAD),

## LM STEM PCI IS MORE FAVORABLE MODE OF REVASCULARIZATION OF TREATING LM STEM DISEASE IN OUR PATIENT POPULATION - BETTER IN-HOSPITAL AND 1-YEAR SURVIVAL OUTCOME AT OUR CENTER

Shams Munwar, AHM Waliul Islam, Azfar H Bhuiyan, AQM Reza, Shahabuddin Talukder, Kazi Atiqur Rahman, Tamzeed Ahmed

**Background:** It is well known that CABG is considered as gold standard treatment of LM stem disease. Over the years PCI of LM stem disease, proved its non-inferiority to CABG in treating LM stem disease.

**Objectives:** Exact data of LM stem PCI and its procedural success, in-hospital And post-procedural one year survival outcome in-terms of repeat hospitalization due to re-infarction, LVF and death , in our population not known clearly. Therefore, we have carried out this prospective observational cohort to see the overall outcomes of LM Stem, PCI in our population

**Methods and materials:** Patients were enrolled in the observational non-randomized prospective cohort between November 2009-septyember 2019, who underwent elective CAG and found LM stem disease and planned for PCI. Total 146 patient (F 29; Male 117) were enrolled in this study.

**Results:** Out of 146 patients, female :29 (19.8%) vs Male: 117 (80.1%). Among, these patient females were more obese (BMI: Female  $29.8 \pm 3.6$  vs male  $26.8 \pm 3.8$ ). Male patient developed LM stem disease in advance age 59 vs female 56 yrs. Among the CAD risk factors HTN 99 (67.8%), Dyslipidemia 82(56.2), Dm, 75(51.4%), smoking 46(31.5), FH 31(21.2). in this study, 28 (19.2%) patient had CABG in the past, Common Stented territory were, Ostial LM 10(6.8%, LM (42(28.8%), LM-LAD 69(47.3), LM-LCX 22(15.1%) and LM-RI 4(2.7%). Common DES were, Everolimus 102(69.9%), Sirolimus 18(12.3%), Zotarolimus 14 (9.6%), BMS 7 (4.8%), Sirolimus with Epithelial Progenitor Cell 5(3.4%), Biolimus 3(2.1%)Among the DAPT; Clopidogrel were 85(57.5%), Ticarel 42(28.8%), Prasugrel 20 (13.7%). Total 12 patient died due to acute, sub-acute stent thrombosis or re-infarction with or without arrythmia. Relook CAG done only in 21(14.4%) patient, PS 17 (80.9%, significant ISR, later went to CABG 3(14.3%) and mild ISR 1 (4.7%). IVUS guided PCI were done only in 16(10.9%) patient.

**Conclusion:** In conclusion, PCI of LM stem disease is one of the important treatment modalities over CABG in our patient population. Quiet a significant number of patients doing well at one year after PCI. Very few patients developed re-stenosis, that needs revascularization either by PCI or CABG. Number of death due to procedure related complication and or re-infarction with life threatening arrythmia might be acceptable. Thus, we may conclude, PCI of LM stem disease might be an alternative to CABG and non-inferior to it.

## IMPACT OF ADMISSION AND POST PROCEDURAL SERUM CREATININE LEVEL IN STEMI PATIENT UNDERGOING PRIMARY PCI: IN-HOSPITAL AND 6-MONTH SURVIVAL OUTCOME

AHM Waliul Islam, Shams Munwar, Azfar H Bhuiyan, Shahabuddin Talukder, AQM Reza, Shamsul Alam, Mahmud Hasan

**Background:** Several studies has shown that impaired renal function might be an important predictor and of adverse cardiovascular events in patient with ST elevated myocardial Infarction (STEMI) undergoing primary percutaneous intervention (pPCI).

**Objectives:** Exact data on the impact of clinical impact of baseline or admission creatinine level of STEMI patient undergoing pPCI in our patient population not well established. Therefore, we have carried out this non-randomized study to see the effects of S. creatinine level on major adverse cardiovascular outcomes among STEMI patient undergoing pPCI.

**Methods and materials:** Patients were enrolled in the observational non-randomized prospective cohort between November 2017-July 2019, who were presented into our emergency department with acute onset of severe chest pain or angina with ECG evidenced acute ST elevated myocardial infarction. Total 137 patient (F 12; Male 125) were enrolled in this study.

**Results:** Out of 137 patients, female :12 (8.75%) vs Male: 125 (91.2%). Among, these patient females were more obese (BMI: Female  $27.0 \pm 2.2$  vs male  $25.4 \pm 4.9$ ) and developed CAD in advance age (Female  $59.1 \pm 14.5$  vs Male  $53.4 \pm 10.5$ ). Among the 137 patients, 89 (65%) were dyslipidemia, 72 (52.6%) were hypertensive, Diabetic 66(48%), Smoker 70 (51%) and FH positive for CAD were 31 (22.6%). According to the involvement of myocardium infarction; STEMI diagnosis of Anterior MI were 48.9% (n=67) and Inferior MI 51.1% (n=70). An elevated serum creatinine level was defined as creatinine  $>1.2$ mg/dl. Based on baseline serum creatinine level, patient was divided into group-A and Group-B. In Group-A. Total 68 patients have S. Creatinine level  $<1.2$  and in Group-B, 69 patients have S. Creatinine level  $>1.2$ . Anterior MI were higher in group -B patient than Group-A; Ant MI as 35 (50.4%) vs 31(45.6%), Inf MIL: 34 (49.35) vs 34 (50%), Shock 11 (15.9%) vs 6 (8.8%0., CHB 4 (5.8%) vs 4 (5.9%), Death 12 (17.4%) vs 2 (2.9%) and LVF 5(7.2%) vs 1(1.5%) with 7 days in-hospital stay after primary PCI. Territory wise involvement of vessel in Group-B patient has more involvement of LAD 35 (50.7%) and Group A has RCA 26(38.2%).

**Conclusion:** In this present study, we found, that baseline serum creatinine level of acute STEMI patients at presentation to our ER, high serum creatinine level are associated with more AMI related complications and death than in lower serum creatinine level. Thus, baseline serum creatinine level may be an important predictor for both in-hospital and 6-month survival outcomes STEMI patients undergoing pPCI.

BC - 095

## PERIPHERAL ARTERY DISEASE BELOW THE KNEE: UNIQUE CHALLENGES

Mohsin Ahmed

Peripheral arterial disease (PAD) is usually caused by atherosclerosis of the major vessels supplying the lower extremities. Approximately 10% of the world's population have PAD. The majority of people with PAD are asymptomatic; some people with PAD have limited walking ability and therefore reduced quality of life. Critical limb ischemia (CLI) is defined as the presence of rest pain, ulcer or gangrene. CLI is growing in global prevalence and is associated with high rates of limb loss and mortality. "Endovascular – first" approach is considered to be the current standard care for symptomatic infrainguinal atherosclerotic disease. PAD is commonly encountered in the tibiopedal vessels located below the knee (BTK), and in this territory, surgical or endovascular treatments can be particularly challenging. The procedural challenge of BTK anatomy is compounded by the coincident clinical challenge of critical limb ischemia. CLI should be effectively treated by multidisciplinary care before, during, and after a revascularization procedure. Care begins with meticulous clinical planning, incorporates rapid achievement of tissue reperfusion, and is absolutely dependent on the critically important post procedure wound care optimization, infectious disease management, tissue offloading, and management of comorbid diseases like diabetes or hypertension.

## INTERVENTIONAL TREATMENT FOR THE DISEASE OF THE AORTA

Abul Hasan Muhammad Bashar

**Background & Objective:** Diseases involving the aorta is not uncommon in Bangladeshi population. Though no definitive statistics are available, aorto-iliac occlusive disease (AIOD) are more frequently encountered in clinical practice compared with aortic aneurysm or dissection. Both open surgical and interventional means are now available for the treatment of the diseases of the aorta. Trans Atlantic Inter-Society Consensus (TASC) has been an important guideline for determining the disease severity and treatment approach for AIOD. For the treatment of aortic aneurysm and dissection, endovascular aneurysm repair (EVAR) is the preferred strategy worldwide. The latter, however, has not attained similar acceptability in this country mainly because of the issue of affordability. The present study was undertaken to analyze our experiences with endovascular solutions for stenotic and aneurysmal diseases of the aorta.

**Methods:** Between January 2017 and December 2018, a total of 66 patients with AIOD were treated by endovascular means. Most of these patients belonged to TASC A or B disease category with only 6 patients having TASC C disease. Over the same duration 5 patients with aortic aneurysm underwent EVAR. Four had abdominal aortic aneurysm (AAA) and 1 thoracic aortic aneurysm (TAA).

**Results:** Primary procedural success was 97% in the AIOD group and 100% in the aneurysm group. There was no in-hospital mortality in either group. Patency rate was 95% and 90% at 1 year and 2 years, respectively in the AIOD group. Type I endoleak was encountered in 1 patient with AAA which was managed by endovascular means.

**Conclusions:** Interventional treatment for the diseases of the aorta is gaining momentum in Bangladesh. In the present socio-economic condition of the country, the cost of EVAR seems prohibitive though intervention for occlusive diseases has made significant progress over the last decade.

## CASE BASED APPROACH TO ASD DEVICE CLOSURE IN ADULTS

Dr. Abdul Momen

According to the current guideline, ASD should be closed in all patients with significant shunt (signs of RV volume overload) and PVR  $<5$  WU regardless of symptoms. Device closure is the method of choice for secundum ASD when applicable.

The first human implantation of ASD device was done in 1975 but it was popularized in the late nineties. In the last few years device closure is being done in progressively increasing in number in few centres of Bangladesh.

Device closure has many advantages over surgery as it can avoid sternotomy and complications of cardiopulmonary bypass, less invasive, short hospital stay and cost effective. Residual ASD may be present in both surgical and device closure and though rare device closure has a late complication of aortic root erosion.

Echocardiographic assessment of ASD is the core of device closure protocol. Both transthoracic (TTE) and transoesophageal (TEE) echocardiography has very important role. Echocardiography can exclude other type of ASD that are not suitable for device closure e.g. ASD primum, sinus venosus and coronary sinus type of ASD. It also helps to diagnose associated other abnormalities that demands

surgical correction of all abnormalities rather than device closure e.g. partial anomalous pulmonary venous drainage, MVP with moderate to severe mitral regurgitation.

Assessment of the rim in secundum type of ASD is the most important part of device closure procedure. In different series about 70-80% of secundum type ASD become suitable for device closure and the rest should be closed by surgery. Complete assessment of rims is possible in most paediatric cases by TTE. In adult TEE is usually mandatory for complete assessment.

In a simple case of small ASD when all the rims are adequate device closure is straight forward. Left or right upper pulmonary vein approach (LUPV or RUPV) can be taken. But in large ASD or when one rim is floppy or marginal the special technique e.g. engaging the LA disc in LUPV or RUPV, catheter support may be required. In a fenestrated ASD suitable device (adequate rims and the intervening tissue between the two ASD is not more than 7-8 mm) we must make sure that the delivery sheath cross through the larger ASD. In complex situations ASD device closure may be feasible e.g. ASD secundum with valvular pulmonary stenosis, ASD with rheumatic mitral stenosis (Lutembacher syndrome). In such cases the other abnormality should be corrected first with pulmonary valvuloplasty or percutaneous trans venous mitral commissurotomy and if optimum results found then the device closure of ASD should be attempted.

So in secundum type of ASD device closure is the method of choice. The heavenly smile in the patient face after the successful device implantation avoiding the pain of sternotomy and complication of cardiopulmonary bypass is beyond comparison.

**BC - 098**

## **EVALUATION OF RIGHT HEART BY ECHOCARDIOGRAPHY**

**S.K. Parashar**

In the last several years, the evaluation of RV functions has assumed great significance due to its adverse prognostic effect observed in various conditions. In cases of pulmonary hypertension, dilated cardiomyopathy, prognosis is strongly related to RV function. Similarly in situations of valve surgery, congenital cardiac lesions, cardiac transplant etc the immediate and long term outcome depends on RVc function. There used to be several problems in evaluation of RV function, like unusual shape, irregular endocardial surfaces, pronounced apical trabeculations, its location behind sternum etc. As such cMRI was considered as a gold standard, but rapid development of some echo technologies like 2-D strain imaging, 3- D echo has brought echo to forefront

The basic principles for evaluation of RV functions are (a) obtain various imaging planes where RV can be visualized, but the RV focused view obtained from apical views is most important view (b) always report RV, RA dimensions together with IVC studies for RA pressure (c) at least 2-3 parameters of RV systolic function should be reported. Basically the RV systolic functions are divided into two broad categories ( A ) Longitudinal systolic function which include tricuspid annular plane systolic excursion –  $N > 17$  mm, TDI-systolic velocity from lateral tricuspid annulus -  $N > 10$  cms /sec., global longitudinal strain of RV free wall –  $N > -29 \pm 4.5\%$ . Of these parameters, GLS is the most robust indicator and has a fairly good correlation with cMRI ejection fraction Some of the limitation of above methods are that they are angle dependent, interrogate only one small segment of RV and are affected by overall global or localized wall motion abnormality, However they are simple and easy to perform except GLS which needs a learning curve ( B ) Global systolic functions which include myocardial performance index –  $N < 0.40-0.43$ , RV fractional area change from focused RV view, which is a % change in RV area between end diastole and end systole .So it is  $A_{diast} - A_{sys} / A_{diast}$  -  $N > 35$  This is technically difficult and needs good imaging quality. Moreover there is uncertainty of correct tracing of endocardium due to heavy trabeculations

RV ejection fraction- this is the most important parameter of RV function and is a significant predictor of clinical outcomes and response to therapy in almost every case of RV dysfunction. EF evaluation by echo was a significant limitation before the advent of advanced 3-D echo, as RV-EF was not possible with 2-D echo. With improved technology 3-D echo is emerging as a best tool and is competing with cMRI : N: >45%

In summary, no single technique is perfect for evaluation of RV functions because all methods have some limitations . As such multiple parameters should be utilized. For a day to day functioning the simple parameters like TAPSE, TDI, FAC give a good idea of RV function. More sophisticated tests like GLS and 3-D echo are significant advancements based on their availability. An important take home message is that if RV is not enlarged and shows good contractility on focused view, then its function is virtually normal

**BC - 099**

## **LEFT VENTRICULAR ASSIST DEVICE**

**Julius Punnen**

The burden of heart failure to society is very high in terms of the disability and poor quality of life which it leads to and economically to the individual, family and society in direct and indirect costs. The gold standard for treating advanced heart failure is heart transplantation. However, there are a lot of limitations to heart transplantation from the perspective of availability of donor organs due to various reasons. DATA from the ISHLT registry shows a stagnation in the number of heart transplants in recent years and further growth is unlikely. On the other hand, advanced heart failure is rising at an alarming proportion. Mechanical circulatory support using devices such as Left ventricular assist device (LVAD) can help a lot of people who do not have access to heart transplantation in time to save their lives. The two-year survival data on newer generation LVADs are nearly as good as heart transplantation and the technology is still evolving. It is a matter of time that these devices may have equal survival to heart transplantation and may even surpass it one day.

The paper will discuss aspects of candidate selection, patient preparation, surgical implantation and management of left ventricular assist devices.

**BC - 100**

## **MINIMALLY INVASIVE CABG**

**Yugal Kishore Mishra**

In this era of technological revolution where everything is micro sized and nano sized, Minimally Invasive Cardiac Surgery also known as "KEY-HOLE" cardiac surgery is a highly technologically advanced form of cardiac surgery which involves very small incision (as small as 2 inches) for performing complex cardiac surgeries like bypass surgery, valve replacement, aortic surgery and surgeries for congenital heart defects. This technique of Minimally Invasive Cardiac Surgery needs very advanced skill training and expertise.

Gone are the days of fear of conventional CABG (Coronary Artery Bypass Graft) for treatment of Coronary Artery Disease when we provide you with State of Art MICS CABG or MICAS (Minimally Invasive Coronary Artery Surgery), which is safer and has better outcomes for the patient.

MICAS is highly advanced form of performing coronary artery bypass in which heart is approached through a small 4cm incision left anterolateral minithoracotomy through 4th or 5th intercostal space. It is performed using all arteries or a combination of arteries and veins from leg. The veins from leg are also harvested endoscopically without cutting any skin over the legs. With the use of highly advanced instruments and experience, MICAS is safer with better outcomes for patients.

Robotic coronary artery surgery is highly technically advanced form of MICAS which provides excellent results and is currently most minimally invasive approach available for coronary artery bypass. This technique requires highly advanced instrumentation with skilled and experienced surgeon to be performed safely.

MICAS is better for the patient because:

- Complete Revascularization
- MICAS generally takes less time than normal CABG
- Maintains the same principals of normal off pump CABG
- Small 5 – 7 cm Posterior-Lateral Thoracotomy providing improved patient and referring physician satisfaction
- Shortened intubation time
- Quicker return to normal activities and less restrictions post surgery

This technique allows the patient to get back to work in a short span of 10-12 days. This is possible because:

- No bone is cut during surgery which makes hospital stay and recovery time significantly less.
- Less blood loss decreases need for blood transfusions.
- Less pain and discomfort.
- The rate of wound infection or lung infection is very less which is highly advantageous in Diabetic and older patients who are more prone to infections.

With all these benefits put together MICAS is the best and safest treatment modality for coronary artery disease.

**BC - 101**

## **HOW SHOULD I EVALUATE ISCHAEMIC MITRAL REGURGITATION**

**Mohammad Ullah Firoze**

Mitral valve competency is dependent on the orchestrated function of the mitral leaflets, chordae tendinae, papillary muscles, subjacent LV myocardium, and fibromuscular annulus. Moderate-to-severe ischemic mitral regurgitation (MR) essentially doubles the mortality of post-MI patients. The pathophysiology of ischaemic MR is also variable. Tethering of mitral valve leaflets is main mechanism, but annular dilatation is also important. Echocardiography (2D & 3D) is an important tool for the detection, evaluation and follow up patients with ischaemic MR.

The treatment options of ischaemic MR in addition to medical treatment is also multiple. Mitral valve repair by mitral valve annuloplasty (surgical and interventional), mitral valve replacement and Mitral clip procedure are being practiced. Moderate MR despite optimum GDMT should undergo surgery only when patient is undergoing another cardiac procedure like CABG. In case severe MR surgery can be done either during other cardiac procedure or as isolated procedure. Presence of basal aneurysm/dyskinesis, significant leaflet tethering, or severe LV enlargement (end diastolic dimension >6.5 cm) is an indication of MV replacement instead of MV repair. The results of Mitra clip repair are still controversial. The results of EVEREST and COAPT trials also differ. Appropriate echocardiographic evaluation is necessary for proper timing of the procedure and for selection of proper way of correction.

## **ECHOCARDIOGRAPHIC ASSESSMENT OF AORTIC VALVE DISEASES FOR CARDIAC SURGERY**

**Md Kabiruzzaman**

Echocardiography is the standard approach for evaluating and following patients with aortic valve diseases and selecting them for operation. For planning of aortic valve surgery it is essential to determine the severity of aortic valve diseases and to find out the measurement of dimensions of Left ventricular outflow tract (LVOT), aortic valve annulus, sinus, sinutubular junction, ascending aorta and arch of aorta, and Echocardiographic imaging allows accurate definition of those structures.

Causes of aortic valve diseases and dilatation of aortic root with or without ascending aorta (proximal part) and dissection of intima can be assessed by Echocardiography.

Smaller aortic annulus (<19mm) may need aortic root enlargement and larger aortic annulus (>30-35mm) may require reduction annuloplasty during surgery.

Dilated aortic root or ascending aorta (e.g., dimension of root /ascending aorta >45mm for bicuspid aortic valve ) requiring valve surgery is indication for prophylactic aortic root or ascending aortic aneurysm resection and replacement with valved-conduit (composite prosthesis containing a mechanical/tissue cardiac valve enclosed within tubular polyester/Dacron graft) e.g., Bentall's procedure.

Echocardiographic imaging is invaluable for the evaluation of LV hypertrophy and systolic function, with calculation of EF. Occasionally , LV hypertrophy is excessive, and a vertical left ventricular outflow tract myomectomy is required to remove sub-Valvular obstruction during surgery.

Longitudinal systolic strain imaging has emerged as a more sensitive measure of LV function and predicts adverse clinical events.

Detection of associated mitral valve disease is important before surgery.

The combination of pulsed, continuous-wave, and color flow Doppler echocardiography is helpful in determining the severity of aortic valve disease.

Evaluation of AS severity is affected by the presence of systemic hypertension, and reevaluation after blood pressure control may be necessary.

In patients with LV dysfunction and low cardiac output, assessing the severity of AS can be enhanced by assessing hemodynamic changes during dobutamine infusion.

Conclusion: Echocardiography is very essential tool for pre-operative, per-operative and post-operative evaluation of aortic valve surgery. Dimensions and pathological anatomy of aortic annulus, sinus, sinutubular junction and ascending aorta will determine the size of prosthetic valve and also determine whether the particular patient require Bentall's procedure or valve-sparing aortic root replacement e.g., David procedure.



## **CARDIAC MRI- AN EMERGING DIAGNOSTIC TOOL**

**Nusrat Ghafoor**

Cardiovascular magnetic resonance imaging (CMR) is a medical imaging technology for non-invasive assessment of the function and structure of the cardiovascular system. The complex motion of the heart during contraction is a serious challenge to the diagnostic radiologist

CMR is a rapidly expanding new & emerging techniques. Though Cardiovascular MRI is complementary to other technique like echocardiography, cardiac CT & nuclear medicine. But it has key role in evidence-based diagnostic & therapeutic pathway in cardiovascular disease.

CMR is using Electrocardiography (ECG) gating & high temporal resolution protocols .A CMR study typically comprises a set of sequences in a protocol tailored to the specific indication for the exam.

The increasingly sophisticated treatment of patients with cardiac disorders has created the need for accurate and reproducible measurements of cardiac chamber volumes and function. CMR uniquely provides accurate and reproducible measures of volumes and function of all 4 cardiac chambers and surrounding vasculature. CMR has the ability to provide this information as well as assess edema, perfusion, viability and vascular anatomy. It provides excellent morphological information with unparalleled definition between blood pool and myocardium. Combined with the known patterns of LGE, CMR provides a powerful tool for the diagnosis and quantification of myocardial infarction. It provides prognostic information prior to either revascularization or ventriculoplasty. Non-ischemic patterns of LGE may reveal infiltrative conditions that are often difficult to diagnose with other techniques, and which may significantly alter clinical management. CMR is an ideal technique to evaluate complications such as intracardiac thrombus or valve dysfunction. It has significant advantages in evaluation of the RV, which is increasingly recognized as an important and prognostic factor in HF and congenital heart disease.

## **CARDIAC MRI - BANGLADESH EXPERIENCE**

**Ajoy Kumar Dutta**

CMR is an advanced imaging technology that has been proven to change patient management including diagnosis and treatment plan in up to 65% of patients imaged both in Europe and United States. However, the utilization of this technology is extremely low in our country due to cost, long scan time and lack of expertise .

The role of magnetic resonance imaging (MRI) has significantly evolved over the last decade. It is powerful, flexible comprehensive tool to investigate various cardiovascular diseases.

Because of its excellent temporal and spatial resolution Cardiac magnetic resonance (CMR) has superior tissue characterization properties with wide coverage compared to any other cardiac imaging technique

MRI can provide different tools like cine imaging (volume & function), Flow quantification, perfusion, scar imaging/ delayed hyper enhancement and tissue characterisation.

Cine imaging acts as workhorse for functional assessment of ventricles . Functional information comprised of assessment of wall motion abnormalities, calculation of ejection fraction .

Data from several heart beats shared to make a single image. Continuous coverage of entire ventricles are taken.

First pass myocardial perfusion obtained after gadolinium bolus injection images both myocardium and blood pool with high spatial resolution at rest for thrombus and tumour detection and stress / rest perfusion for detection of myocardial ischemia.

Myocardial viability can be assessed 10-15 minutes after contrast shows delayed enhancement of infarcts or scar in hypokinetic or akinetic segment. Percentage of myocardial wall infarcts predicts functional recovery. Cutoff of 50% thickness delayed enhancement of hypokinetic or akinetic segment determines likelihood of functional recovery.

Patterns of scar in Late Gadolinium enhancement also differentiates the diagnosis and prognosis of different non ischemic cardiomyopathy.

Top indications are viability assessment, LV function, Cardiomyopathy, ischemia and congenital heart disease.

## **INTERVENTIONAL MANAGEMENT OF ARRHYTHMIA IN BANGLADESH**

**M Atahar Ali**

Cardiovascular disease like heart failure and cardiac arrhythmias form a major component of non-communicable disease burden in Bangladeshi population. Approximately 4000 patients receive interventional therapies per year for arrhythmia and heart failure. Interventional therapies include pacemaker, Implantable Cardioverter Defibrillator (ICD), Cardiac resynchronization therapy (CRT) and Radio Frequency Ablation (RFA).

Cardiac arrhythmias can present as benign or as life threatening arrhythmias or sudden cardiac death. The field of clinical cardiac electrophysiology has evolved dramatically over the last 30 years globally and in last 15 years in Bangladesh. Service area of this field is increasing day by day.

Atrial fibrillation is the most common sustained arrhythmia. Global prevalence among general population is 1% and incidence increases with age globally. Supra ventricular tachycardia (SVT) is a regular narrow complex tachycardia; its global prevalence is 2-3 per thousand and incidence is 35 per 100 populations. This reflects huge number of patient burden in our country.

Bradycardia is another common arrhythmia. Pacemaker is an established lifesaving treatment. According to world survey of cardiac pacing and Implantable Cardioverter Defibrillator, more than 1 million implantation done per year worldwide. This figure is nearly 1500 to 2000 in Bangladesh.

Sudden cardiac death (SCD) is an unexplained death from cardiac causes occurring within a short time period. In US and Europe annual incidence of SCD ranges from 50-100 per 100 thousand among general populations. In Asia the incidence is in between 35 to 50 per 100 thousand general populations. Electrophysiology has to play important role for prevention of such catastrophe.

In Bangladesh all kinds of treatment facilities are available at government and private level but it is based only centrally. The number of manpower is limited. RFA is approachable for most patients but many patients do not get access to device therapy. The big challenge for the electrophysiologist is how to make accessible this service to most of the patient.

BC - 106

## HIGH DENSITY 3D MAPPING AND ABLATION OF COMPLEX CARDIAC ARRHYTHMIAS: OUR EXPERIENCE IN NICVD

Md. Mohsin Hossain

**Background:** Catheter ablation can be curative in the patients of drug refractory tachyarrhythmia. 3D electroanatomical mapping (EAM) is an established tool facilitating catheter ablation. This system is particularly valuable for mapping complex arrhythmias, which provide excellent assistance to catheter navigation reduces fluoroscopy exposure and also allow for the accurate placement of catheters. The Rhythmia Mapping System (RMS, Boston Scientific) is a novel system that allows for ultra-fast, high-density 3D mapping.

**Methods:** A total number of 44 patients of different tachyarrhythmia were scheduled for catheter ablation by Rhythmia Mapping System in National Institute of Cardiovascular Diseases, Bangladesh during 3rd February'2018 to 18th July'2019. During and after the procedure all the cases were evaluated for different procedure parameters, acute success and in hospital success.

**Results:** Among the patients (28/44 male) 13 (29.55%) cases were atrial fibrillation, 6 (13.64%) cases were atrial flutter, 6 (13.64%) cases were atrial tachycardia, 2 (4.55%) cases were ventricular tachycardia, 11 (25%) cases were PVC and 6 (13.64%) cases were accessory pathway. Mean age was 38±4.5 years. In all cases, the tachycardias were adequately mapped & proper identification of focus was done during the index procedure and successfully terminated by radiofrequency ablation. In 25 (56.82%) of tachyarrhythmia patients the mechanism was macroreentry/microreentry, while in 19 (43.18%) cases the mechanism was increased automaticity. In patients of atrial fibrillation all 4 pulmonary veins isolation were done. The mean mapping time was 28.6 ± 17 minutes, and the mean radiofrequency ablation time to arrhythmia termination was 3.2 ± 2.6 minutes. One patient developed cardiac tamponade and was managed accordingly. During hospital discharge all the patients were free of tachyarrhythmia and were in sinus rhythm.

**Conclusions:** This new automated ultrahigh resolution mapping system allows accurate diagnosis of tachyarrhythmia circuits. Ablation of the focus resulted in a high acute success.