Surgery for Tetralogy of Fallot: Our Experience

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BACKGROUND

Tetralogy of Fallot (TOF) is a congenital cardiac malformation characterized by underdevelopment of the right ventricular infundibulum with anterior and cephalad displacement of the infundibular septum and its parietal extension, associated with RV outflow stenosis. TOF is one of the commonest cyanotic congenital heart disease. Surgical Treatment modality for Tetralogy of Fallot in our centre is total correction as far as possible or palliative shunt procedures when ever ICR is not feasible due to inadequate Pulmonary artery size.

METHODS AND RESULT

Last hundred cases of Tetralogy of Fallot who had undergone total intracardiac repair by a single surgical team between 6/2064 and 07/2067 were evaluated in this study. Different approaches for repair of the lesions were assessed. Mean age of the patient was 8.56±7.6 years. Male: female ratio was 1.7:1. Overall in hospital mortality was 7 %.

CONCLUSION

Different surgical approaches to repair of TOF can be applied to specific surgical anatomy with satisfactory early outcome.

Short term outcome of Double Valve Replacement with or without concomitant tricuspid repair in rheumatic patients below 15 years of age.

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BACKGROUND

Rheumatic heart disease is still prevalent in developing countries and it is the main cause of valvular surgery in pediatric population.

METHOD

Here we present our experience of double valve replacement with or without tricuspid valve repair in pediatric population.

RESULTS

During 2006 – 2010 in our unit, we have performed valvular surgeries for rheumatic lesions on 199 patients below 15 years of age and among them 65 (32.7%) had DVR. Two (3.1%) were below 10 years of age. Male: Female ratio was 2.1:1 and mean Body surface area (BSA) was 1.25+0.2 m X m. Majority of them had regurgitant leasions. 88.8% were in NYHA III and IV. Mean LVIDs and LVIDd were 4.17+0.83 cm and 6.16+1.1cm respectively. Ejection fraction was 60.1+7.0%. 14 patients underwent concomitant Tricuspid valve repair: 12 had Kay's annuloplasty and 2 had De Vega's annuloplasty. Total Cardiopulmonary bypass time and Aortic cross clamp time were 104.35+19.92 minutes and 81.33+16 minutes respectively. None had inhospital mortality and major complications postoperatively. Data were taken at 3 months (44 patients) and 12 months (32 patients) postoperatively. There was significant reduction in LVIDs and LVIDd at 3 months (3.21+0.65 cm and 4.41+0.74 cm) (p<0.05) and at 12 months (3.02+0.7 cm and 4.5+0.7 cm) (p<0.05). In patients who underwent tricuspid repair, 4 patients had significant tricuspid regurgitation postoperatively. The mean peak aortic valve gradient was 23.9+9.4 mmHg at 3 months and 26+12.44 mmHg at 12 months.

CONCLUSION

From this study we can conclude that double valve replacement can be performed even in pediatric population with acceptable outcome. However their growth will be a concern in future for potential patient-prosthetic mismatch.

Premature Coronary Heart Disease in Nepal: An Evidence of a Rising Trend from a Hospital-Based Data

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BACKGROUND

Studies from South Asian countries have shown that coronary heart disease is affecting younger population more than it was previously thought to be. However, in Nepal, no study has been done to assess the prevalence of premature CAD (Coronary Artery Disease) or if there are certain risk factors more common in this specific group of patients.

OBJECTIVE

The study aimed to estimate the proportion of premature Coronary artery disease in the Nepalese population with established coronary heart disease.

METHODS

The study used an indirect method of estimation of premature CAD through the use of hospital-based data of patients undergoing Percutaneous Transluminal Coronary Angioplasty (PTCA) at Norvic International hospital between 2002 and October 2010.

RESULTS

Out of the 863 Coronary Artery Disease patients who were treated with PTCA during the eight years period, 180 (20.9%) had presented at the age less than 50 years. Year-wise analysis of the data showed a rising trend for premature Coronary Artery Disease: from 15% in 2002-3 to about 25% in 2010 (till October end). Hypertension, tobacco addiction and dyslipidemia were more common in those with premature CAD.

CONCLUSION

The findings point out towards an alarmingly trend of Coronary Artery Disease in the younger population of Nepal thus necessitating the need for aggressive preventive programmes targeting the young population.

Coronary Angioplasty Outcomes in the Elderly Nepalese Patients: A Nine year experience from a private Cardiac Centre of a developing country.

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BACKGROUND

The choice for finest treatment for coronary artery disease in the elderly has always been a difficult task given that the elderly patients have more risk factors and also face more side effects of the drugs. Percutaneous Coronary Intervention (PCI) as an option of treatment for coronary reperfusion has remained historically controversial.

OBJECTIVE

The aim of the study was to evaluate and compare the outcomes of PCI between the elderly (>70 yrs) and the non-elderly (70 yrs and younger) Nepalese patients who had been admitted to Norvic International Hospital between early 2002 and October 2010.

METHODS

Data of a total of 114 elderly and 749 non-elderly patients were retrospectively analyzed. Presence of risk factors such as hypertension, diabetes and dyslipidemia was noted. Outcome of the procedure was considered successful if a normal antegrade flow was noted after the procedure. Major complications included in-hospital death, sub/acute thrombosis, life-threatening arrhythmia (VT/VF) and minor complications included gastro-intestinal bleeding and groin hematoma formation, and need for blood transfusion.

FINDINGS

A total of 863 patients had undergone PCI between early 2002 and October 2010. There were 114 elderly (>70 years) patients while the remaining 749 were aged 70 years or younger. The elderly were less likely to be smokers, diabetic, dyslipidemic or with a positive family history. But they were more likely to be hypertensive. The proportion of females was considerably higher in the elderly group.

The elderly patients slightly less success rate compared to the non-elderly (95.7% vs. 99.3%). Proportionately, there were more in-hospital deaths in the elderly group (7 % vs. 0.5%). The causes of death in the elderly were not directly related to PCI but rather due to more often diffuse Multiple Vessel Disease, the complications of the risk factors and other co-morbidities. Comparatively, minor complications were present more in the non-elderly group.

CONCLUSION

Treatment success with Percutaneous Coronary Invention of elderly patients can be safely performed with acceptable success rates.

Comparison of Atherosclerotic severity and Procedural Success in Diabetic and Non-diabetic patients undergoing Percutaneous Coronary Intervention

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BACKGROUND

Percutaneous Coronary Intervention (PCI) is the most widely used treatment of modality for most of the coronary artery disease patients. Pre-PCI coronary angiography (CAG) can give a good insight to the number and severity of the culprit vessel(s). It can also be utilized to study if the presence of a strong atherogenic risk factor such as diabetes mellitus enhances the atherosclerotic severity of the disease. Also, diabetes is known to increase risk of various complications and adverse outcome with coronary revascularisation procedures.

OBJECTIVE

Norvic International Hospital began to do PCI since 2002. This study was conducted to compare angiographic findings of diabetic and non-diabetic patients with critical coronary artery disease undergoing PCI at the hospital between January 2002 and October 2010. In addition, the study analyzed the outcomes and complications of PCI in the diabetic and non-diabetic patients.

METHOD

This was a retrospective study of 863 patients who had undergone PCI between the nine years period. Data was collected from Cathlab database of all the patients who underwent coronary angiography followed by PCI. Standard nomenclature for angiographic descriptions and standard definitions for diabetic mellitus were followed. A stenosis of 70% or more was termed critical.

RESULTS

Of the 863 patients enrolled in this study, 318 (36.9%) were diabetic and the remaining 545 (63.1%) were non-diabetic.

Coronary angiographic findings performed prior to PCI revealed that out of all the patients (n=863) most patients had critical single vessel disease (70.8 %) followed by double vessel disease (23.8 %) and triple vessel disease (5.4%). Diabetics had higher prevalence of double and triple vessel diseases compared to the non-diabetics (27.5% vs. 21.7% and 7.0% vs. 4.4% respectively) whereas single vessel disease was more common in the non-diabetics (65.6% vs. 73.9%) (p=0.033).

In the combined group, commonly involved vessels with severe stenosis were: Left Anterior Descending artery (42.7%), Right Coronary Artery (33.9%), Left Circumflex Artery (29.5%) and Left Main coronary artery (0.4%). When analyzed separately, there was slightly higher prevalence of critical stenosis among diabetics compared to the non-diabetics: Left Anterior Descending artery (46.4% vs. 40.6%, p=0.060), Right Coronary Artery (35.1% vs. 33.3%, p=0.187), Left Circum-

flex Artery (31.8% vs. 28.2%, p=0.182), Left Main coronary artery (0.4%, vs. 0.3%, p=0.991).

Procedural success rates were similar among both diabetic and non-diabetic groups: 310 (97.48%) vs. 541 (99.26%). Complications of the procedure were however higher in the diabetic patients: In-hospital death (OR= 3.4, 95% CI: 0.6-19.1), sub/acute thrombosis (OR= 0.8, 95% CI: 0.1-9.4), and blood transfusion (OR= 1.7, 95% CI: 1.0-27.5).

CONCLUSION

The study has shown that more widespread coronary artery disease in terms of number of vessels involved is observed in the diabetic patients. However, severity of atherosclerosis was not markedly high in the diabetic group, possibly because diabetic had remained under control in most of the diabetics.

The immediate outcome of PCI was equally successful in diabetic and non-diabetic population groups. But the complications were higher with the diabetic group because of presence of other co-morbidities and were not procedure-related. Studies from other centers have also generally shown a comparable procedural success but higher in-hospital deaths among the diabetic cases. This confirms that diabetic patients with CAD remain a high risk group population and need a special attention despite initial successful PCI.

First Six-years of Primary Percutaneous Coronary Intervention at Norvic International Hospital: Patient Profile, Procedural Efficiency and Follow-up

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BACKGROUND

Primary Percutaneous Coronary Intervention (PCI) is an emergency procedure in which angioplasty is done in Acute Myocardial Infarction (AMI) patient as soon as s/he arrives in the hospital. Norvic International Hospital that began PTCA in 2002 has been providing this often lifesaving service since 2005.

OBJECTIVE

The paper aims to present a profile of the patients that underwent primary PCI in the hospital between 2005 and 2009, evaluate the performance of the procedure both in terms of immediate complications and patient status in the follow-ups.

METHOD

A retrospective analysis of data of all the patients who underwent primary angioplasty in this hospital in between January 2005 till October 2010 was done. Demographic characteristics, coronary risk factors, angiographic findings, procedural details and immediate post-procedural outcomes and complications were recorded. In particular, Door-to-balloon-time (DTBT), which is a standard measure to determine how long it takes before a heart attack patient receives often lifesaving balloon (primary angioplasty) after reaching the hospital, was calculated.

Patients were followed up within 3 months, 6 months and then on a yearly basis. Follow up questionnaire included status of patient's health including any major event such as myocardial infarction, stroke, revascularization, and death.

FINDINGS

One hundred and thirty two patients underwent primary angioplasty in the hospital in the six-year period. One hundred and twenty one (92%) patients were Nepalese and the rest (8%) were foreigners. The majority of them (86%) were males. A majority of the patients (60.60%) were in between 40-60 years of age. Hypertension, dyslipidemia, smoking, positive family history and diabetes were present in 50%, 46%, 39%, 38% and 33% of the patients. About half of the patients (55 %) came with inferior wall myocardial infarction. Drug Eluting Stents were used in 72% of the patients. The coronary vessels treated were: Right Coronary Artery (49%), Left Anterior Descending (38%), Left Circumflex Artery (12%), and Left Main Artery (1%).

Overall procedural success was achieved in all but 2 (1.51%) cases. One death occurred due to possible mechanical complication after 4 hours of the procedure, while the other patient succumbed to VT/VF the following morning. There were no other major adverse cardiac events like cerebrovascular accident re-infarction, major bleed in other patients.

Average annual DTBT between 2005 and 2009 were as follows: 2005 (N=5, 74.5± 2.3), 2006 (N=6, 72.2 ± 10.7), 2007(N=19, 65.3 ± 10.8), 2008 (N=24, 60.3 ± 8.2), 2009 (N=45, 45.8 ± 9.1) and 2010 (up to October) (N=33, 44.5 ± 9.4) minutes. The maximum door to balloon time was 95 minutes and the minimum was 23 minutes. Only two cases had the DTBT more than the recommended 90 minutes.

One hundred and thirty patients were discharged successfully from the hospital. Among them, follow-ups could be completed as follows: 3 months (97/97, 100%), 6 months (88/97, 90.7%), 1 year (75/87, 86.2%), 2 years (36/44, 81.81%), 3 years (17/22, 77.27%), 4 years (4/10, 40%) and 5 years (0/4, 0%). One case of death was recorded within 3 months of the procedure due to sub-acute stent thrombosis. The remaining patients who could be followed-up were asymptomatic and doing normal activity. There were no reports of any major cardiovascular events such as ischemic attack or stroke in these patients.

CONCLUSION

The study gave an overview of the demographic, clinical and procedural characteristics of the patients that underwent primary PCI at Norvic International Hospital. Procedural efficiency parameters such as the DTBT achieved by the centre are in accordance with the ACC/AHA guideline. The follow-up study of these patients outlined a good success rate in terms of immediate complications and long term prognosis in the follow-ups which is comparable to the other centers abroad.

Cardiac Auscultation Versus Echocardiography-Pilot Study on School Heart Survey

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OBJECTIVE

To detect RHD in clinically apparent and clinically silent cases and find out sensitivity and specificity of cardiac auscultation in the diagnosis of RHD and to determine the prevalence of RHD based on echocardiography.

MATERIAL AND METHODS

A Cross-sectional pilot study was carried out in Seven hundred and fifty eight students both male and female aged 5-16 yrs.Five schools in Kathmandu Valley both in urban, urban slum and rural areas were selected for the study. Clinical examination was done by an experienced physician. Sex, height in meters, weight in Kg, socio-economic status (SES) recorded in tabular form. All the students had screening echocardiography examination done.

RESULTS

On clinical examination 731 (96.43%) had normal cardiac findings on auscultation. Only 27 (3.56%) students had cardiac murmurs on auscultation. Of those students having cardiac murmur 15 had normal echocardiogram (55.55%) and only twelve had abnormal echo (44.4%). Presuming echocardiography as gold standard in diagnosing RHD, sensitivity of cardiac auscultation is 13.1% (7.9 to 20.7) at 95% confidence interval. 731 students out of 758 (96.43%) had normal cardiac findings on auscultation but 91 of them had evidence of RHD. Hence, the specificity of cardiac auscultation in diagnosing RHD is 96.7% (94.9 to 97.9) at 95% confidence interval. The predictive value of positive cardiac auscultation is 43.2% (27.5 to 60.4) at 95% confidence interval. The predictive value of negative cardiac auscultation is 85.3% (82.5 to 87.8) at 95% confidence interval. The p value for the sensitivity, specificity and predictive values is <0.01 which is highly significant.

CONCLUSION

17.81% of school children screened have evidence of RHD on echocardiography..16.22% students having normal findings of cardiac auscultation had abnormal echocardiogram suggestive of RHD. Only 0.79% students who had cardiac murmur were positive for RHD on echocardiography.

Sensitivity of cardiac auscultation in diagnosing RHD is 13.1% and specificity is 96.7%. Predictive value of positive cardiac auscultation is 43.2% and predictive value of negative cardiac auscultation is 85.3% thus, making cardiac auscultation as undependable tool for detection of RHD and echocardiography a very dependable tool for surveillance.

Profile of Atrial Fibrillation in Nepal

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BACKGROUND

The conventional causes and risk factors for atrial fibrillation are somewhat arbitrary; overlap exists, multiple etiologies are often present in one individual, and clinical presentation is non-specific. This study is an attempt to study the clinical and echocardiographic profile of patients with AF in a tertiary care super-specialty hospital of a developing country.

METHODS

This study was conducted in College of Medical Sciences, Chitwan, Nepal during first 6 months of 2010. Subjects with AF, diagnosed based on surface ECG, were included in the study. The causes of AF and structural as well as functional abnormalities as shown by transthoracic echocardiography were recorded.

RESULTS

A total of 68 consecutive subjects were included in the study. The mean age was 32 (20) years ranging from 17 to 80 years. Rheumatic heart disease was the most common cause (29.41%) followed by lone atrial fibrillation (23.52%), coronary artery disease (17.64%), hypertension (13.23%) and cardiomyopathy (7.35%). Other causes included COPD (5.88%), WPW syndrome (1.47%), constrictive pericarditis (1.47%) and tricuspid valve infective endocarditis (1.47%). Nearly 65 % subjects had either structural or functional abnormalities in echocardiographic study and remaining patients had normal echo study.

CONCLUSION

In contrast to the studies reported from developed nations, our subjects with AF were younger, the most common condition was RHD and the majority had either structural or functional abnormalities in echocardiographic study.

A study on major cardiovascular risk factors in Acute Coronary Syndrome (ACS) patient 40years and below admitted in CCU of Shahid Gangalal National Heart Center

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OBJECTIVES

Coronary artery disease (CAD), predominately manifest in older individuals, is a devastating disease precisely because an otherwise healthy person in the prime of life may die or become disabled without warning. Premature CAD is defined as cardiac events occurring before the age of 45 in men and 55 in women. In its severe form it is defined as CAD occurring below the age of 40 years. Prematurity and severity suggests that the disease starts at an early age and has a malignant course. Numbers of previous epidemiological studies have established the relationship between risk factors such as smoking, hypertension, dyslipidemia, and glucose intolerance and the occurrence of coronary artery disease (CAD). Although there are few studies on risk factors in CAD patient but till date there is no studies conducted regarding young CAD patients in Nepal. Thus in this study we aim to investigate the major risk factors in young ACS patients.

MATERIALS AND METHODS

All ACS patients who are 40years or below admitted in Cardiac Care Unit (CCU) of Shahid Gangalal National Heart Centre (SGNHC) from April 2008 to April 2009 were included in the Study. Patient who were diagnosed non- ST elevation Myocardial infarction (NSTEMI) or unstable angina (USA) need a significant stenosis (more than 50%) in coronary angiogram (CAG) for inclusion.

RESULTS

There were all together 54 ACS patients, male 44(81%) and female 10(19%).Mean age 37years, youngest of 29years.There were 36 STEMI, 5 NSTEMI and 13Unstable Angina patients. HTN is the risk factor which was more commonly diagnosed and treated, while Dyslipidemia,DM and IFG were not usually diagnosed in young patient before they were diagnosed CAD. Dyslipidemia was the most common comprising 83.3% followed by HTN 70%, smoking 70%, abnormal blood glucose level 50%, DM in 22.2% while IFG in 27.7 %. High total cholesterol (48%) is the common form of dyslipidemia followed by high LDL (44.4%), low HDL in 31.4%.When the non modifiable risk factor family history is excluded, 85% of the patients have two or more risk factors of CAD. When smoking along with family history is excluded 94.5% of the patients have 1 or more risks factors for CAD.

CONCLUSIONS

Dyslipidemia, HTN and smoking were the most common risk factors in these patients. These risk factors occur in group in the young ACS patient. These risk factors are not diagnosed and treated before the patient are diagnosed as ACS.As management of risk factor is important aspect in the primary prevention of CAD, everyone should be aware about these risk factors and their diagnosis and treatment. But the important question still remains unanswered at what age we should start to screen and treat these risk factors as people at the age of twenty and thirty are presenting with the ACS.

Observational Study of Pulmonary Embolism Patients in Shahid Gangalal National Heart Centre

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OBJECTIVES

Pulmonary thromboembolism (PE) is a relatively common cardiovascular emergency , with a significant mortality and morbidity often precipitated by deep venous thrombosis (DVT).It is considered as the third most common cardiovascular disorder after Acute Coronary Syndromes (ACS) and Stroke. Because its many non-specific clinical features it is one of the most difficult diagnostic challenges in all of medicine. It has been reported, that only one third of patients dying with PE have a correct ante mortem diagnosis. Though small number of patient population we are trying to find out the clinical characteristic of Nepali PE patients. We hope that it can be helpful in the recognition and management of PE patient.

MATERIALS AND METHODS

Eleven consecutive patients who were treated in our cardiac center for PE were studied. The diagnosis was confirmed by CT. All the patient data in this study were obtained from hospital registry.

RESULTS

The age range was between 31- 68years. There were 8 male and 3 female patients. Among eleven patients three were diagnosed as high risk pulmonary embolism, eight were intermediate risk. About the predisposing factors two have facture bone; cancer in one, recent surgery in one, remaining three patient don't have any predisposing factor.
Nine of these patients presented to the ER. Nine cases were referred cases from other hospital with the diagnosis of ACS, only one patient was diagnosed as pulmonary embolism by the referring hospital. One patient presented to our ER and suspected to have PE on ECHO finding. Shortness of breath was present in all of them, chest discomfort in seven patients and syncope in three patients. Three patient presented in Cardiogenic shock. Sinus tachycardia was present in five patients.SPO2 was less than 90% in six patients. Troponin I was positive in just a single patient. Dilated RA and RV were present in all patients. All the patients were treated with Heparin/ Low molecular Heparin.
Among the three patients who were diagnosed as high risk pulmonary embolism and was supposed to be treated with Thrombolytic therapy only one patient was treated with it. Two high risk pulmonary embolism patients did not receive such therapy, as we could not diagnose them when they presented to us. They were treated in line of ACS initially. All the patients were discharged on Warfarin after few days of hospital stay.

CONCLUSION

PE is a common cardiovascular emergency. Diagnosis of PE is tricky because of non-specific sign and symptom. Shortness of breath and chest discomfort is the common symptoms. Though ECG and chest x-ray has minimal role in the diagnosis but they can help us to make us suspicious about the diagnosis. ECHO can provide important information in the diagnosis of PE. Suspicion is the most important part to come to the diagnosis of PE.

Prolonging the intubation period, inotropic support and preload reduction improves outcome of pericardiectomy in cases of constrictive pericarditis

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BACKGROUND

Pericardiectomy is the only accepted curative treatment for improving cardiac haemodynamics in chronic constrictive pericarditis (CCP) but mortality is uniformly high, reported at up to15 %.

METHOD

The database from all patients undergoing Pericardiectomy by a single surgeon in our hospital from January 2006 till July 2010 was reviewed to analyze the early outcomes.

RESULTS

The total number of patients was 40 among them 25 were male and 15 female (M:F=1.6:1). Mean age was 23.33 ±12.79 (range 8-63 years). The duration of illness ranged between 3 to 13 months. The most common presenting symptoms were dyspnoea, abdominal discomfort and abdominal distension. Post operative ventilation period was 31±12 hours (18-96 hrs). Mean duration of post operative inotropes use was 40.6 hours (24 to 100 hours). Preload reduction was done with glycerine trinitrate infusion and was started during operation and continued for the mean period of 30 hours (24 to 40 hours). The mean ICU stay was 3.23±2.25 days (2 - 13 days) and total postoperative hospital stay was 10.36±8.24 days (4 - 47 days). 3% had minor complication which included superficial wound infection and pleural effusion. One patient had delayed sternal closure .There were 2 mortalities (5%) and among them one had effusive constrictive pericarditis.

CONCLUSION

From this study we can conclude that pericardiectomy can safely be performed without the use of CPB, and outcomes in respect of early mortality can be improved by prolonging the intubation period, inotropic support and preload reduction.

Primary PCI in young patients in SGNHC, its prevalence and prognosis

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OBJECTIVE

We sought to determine in-hospital and intermediate-term outcomes of primary percutaneous coronary intervention (PCI) for ST elevation myocardial infarction (STEMI) in young adults.

MATERIAL AND METHODS

We reviewed 78 consecutive patients treated with primary angioplasty for acute MI;the results of primary procedure among young (45 years and below) and relatively older(above 45years) patients were compared. Clinical characteristics, in-hospital and intermediate-term outcomes of primary PCI were analyzed.

RESULTS

Compared with older patients, the young patients had significantly lower in-hospital mortality p<0.001; young group had lower unsuccessful procedure rates of primary PCI for STEMI . These results suggest that young adults who underwent primary PCI have favorable in-hospital outcomes.

CONCLUSION

Primary PCI for young adults with STEMI is safer, more feasible and effective than for a relatively older population.

In Vitro Cardiogenesis can be initiated in Human CD34+ Cells

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BACKGROUND

The extensive damage that occurs in the cardiac tissue after myocardial infarct is the major concern in post infarct management. It is known that the transplantation of autologous stem cells/ fetal cardiomyocytes in the heart scar tissue developed due to infarct limits the scar expansion and prevents post infarct heart failures. The adult stem cells mobilized by administration of G-CSF result in homing of stem cells into the damaged myocardium. This is because of the fact that stem cells have the ability to proliferate and capacity to generate into multiple cell lineages. However the homing process due to the transplantation of autologous stem cells is time consuming.

METHOD

This study was conducted in Tirupati, India in the department of Cardiology with the collaboration of Department of Biotechnology. A healthy donor was selected as per the guidelines given by the institutional ethical committee and Helsinki declaration. The donor was given G-CSF 5 microg/ kg/day and stem cells were harvested from the peripheral blood using Fresenius ASTec204 cell separator. The PBSC were then evaluated by immunohistochemical staining using anti-human CD34 monoclonal antibodies. The cells were then cultured in DMEM with 10% FCS for 17 weeks and in vitro cardiogenesis was initiated by adding 4 microM/l 5'Azacytidine.

RESULTS

In vitro cardiogenesis was initiated in pure CD34+ cells with 5' Azacytidine. The cells showed spontaneous beating after 24 hours of treatment and after 5 weeks, the cells connected with the adjoining cells by a myotube. In these cells, expression of myosin light chain (MLC2v) gene and GATA-4 transcription factor validated the development of cardiomyocytes.

CONCLUSION

Our method of in vitro cardiogenesis from autologous stem cells could be the future method of developing cardiomyocytes which can be further used to limit the size of infarcted myocardium and this modality would be less-time consuming.

"An evaluation study of Intensive Care and Coronary Care Nursing Training"

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INTRODUCTION

Intensive Care Unit and Coronary Care Unit (ICU/CCU) Nursing Training has been started in Tribhuvan University Teaching Hospital (TUTH) since 1999 for the fulfillment of shortage of trained nursing staff to run specialty services like Intensive care and coronary care. More than 100 staff nurses were trained till date.

OBJECTIVE OF THE STUDY

1. To assess knowledge, attitude and skill of trained nurses.
2. To evaluate appropriateness of staffing for efficient functioning of ICU/CCU.
3. To assure nurse's performance of advanced skills like CPR, DC shock, Intubation / Extubation and ECG monitoring etc.
4. To identify job satisfaction and refresher training needs.
5. To suggest areas for policy for program improvement.

METHODOLOGY

A descriptive case study with 100 samples of trained ICU/CCU nurses from all hospital were selected purposively for quantitative and qualitative data. Study tools were self-administered questionnaire, Knowledge test checklist, Skill test checklist and Health facility assessment checklist.

RESULTS

Sixty-one nurses responded from thirteen hospitals. The personal characteristics showed median age of nurses was 30 years. 62% Certificate level and 27% Bachelor Nursing graduates, 85.2% married, only 5% sister incharges. 54% are currently working in ICU/CCU.

Skill Test- Ten scales of common procedures were used for performance observation in ICU/CCU. The majority of nurses scored more than 80%. Knowledge test was done by forty items checklist with true and false responses, which revealed 49 nurses scored 60-80% and 11 scored less than 60%. Result of physical facility showed most hospitals have emergency cart and emergency medicines with required equipments but none had preparation room, Isolation room, alarm system, central line of O2 and suction, central monitor and ABG machine except in TUTH. Majority of nurse were moderately satisfied with ICU/CCU nursing Training.

CONCLUSION

ICU/CCU nursing training helps to improve quality of nursing care and should be further strengthen.

Outcome Of Minimally Invasive Approach For Aortic Valve Replacement

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INTRODUCTION

Minimally invasive cardiac surgery through upper mini-sternotomy has clear benefits compared with standard sternotomy. These benefits include less surgical trauma, less bleeding, decreased pain, reduced risk of wound infection, shorter hospital stay and faster rehabilitation. This retrospective study compares post-operative outcomes of aortic valve replacement using a minimally invasive approach opposite to conventional surgery.

METHODS

Between October 2009 to September 2010, 25 patients underwent elective isolated Aortic Valve Replacement (AVR) in unit III of Department of cardiovascular surgery, seven of which were done using a "J" mini-sternotomy with a 7-8cm skin incision. Average age of the patients in conventional group (Group A) was 35.6 ±21.5years while it was 27.1±9.4 years in minimally invasive group (Group B).

Outcome variable analyzed and compared were cross-clamp and cardiopulmonary by-pass time, mortality, IUC stay, post-operative ventilation time, Peri-operative major complications and total post operative drainage.

RESULTS

There were no statistical differences in both groups in terms of by-pass and cross-clamp times. There is a trend towards a lower post-operative ventilation time, ICU stay and post operative drainage in the minimally invasive group. There was one re-exploration, one sternal wound infection and one mortality in conventional group compared to none in minimally invasive group.

CONCLUSION

Minimally invasive approach for aortic valve replacement via partial sternotomy is safe, reliable and practical.

Community Based Screening and Intervention for Coronary Risk Factors and Chronic Kidney Disease in Eastern Nepal

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INTRODUCTION
We conducted first community-based screening and intervention study in eastern Nepal with the aim to create awareness, detect and manage risk factors for chronic kidney disease, diabetes, hypertension and cardiovascular disease (CVD), that ultimately expected to prevent CVD deaths and prevent chronic kidney disease (CKD) progression.

METHODS
A collaborating network among primary health center or equivalent, district hospital and tertiary care center along with community-based volunteer program was created to educate, screen and intervene for hypertension, diabetes, cardiovascular risk factors and CKD. The main strategies of intervention were public and heath professional education, intersectoral collaboration, community participation and organization and early detection and management of CVD and CVD risk factors. General health status and lifestyle habit, physical examination and blood pressure were assessed. The urine sample was tested by Multistix and for albumin/creatinine ratio (selected cases). Serum creatinine, fasting glucose and lipid profile were estimated. A cardiovascular risk factor score, 0 to 6, was determined. A mechanism was developed to follow-up screened positive persons in primary or equivalent health centre. Referrals were made to tertiary care centre as needed. The subjects were closely monitored by community volunteers to pursue follow-up and adherence to prescribed treatment. Achievement of blood pressure and glycemic control, ceasation of smoking (subjective) and reduction of proteinuria was assessed.

RESULTS
A total of 25,000 people from 4 districts of Eastern Nepal were evaluated. Mean age of screened population was 39.5years.History of stroke, heart attack or angina and smoking were elicited in 0.56%, 1.21% and 0.56% and 23.5%. 49% had sedentary life style. Hypertension, obesity, diabetes were found in 22%, 5.3% and 8.4% of the screened population, respectively. 40% of hypertensive and 48% of diabetics patients were newly detected during the screening. Two or more cardiovascular risk factors were present in 29.6% of the screened population. 4100 subjects positive at screening entered an intervention program by combining lifestyle modifications and pharmacological management. 3240 patients reached 6 to 30 month follow-up. Glycemic (HbA1c <7%) and blood pressure control (<140/90 mmHg) was achieved in 63% and 73%, respectively. Regression or stabilization of proteinuria was achieved in 51% of patients. .

CONCLUSIONS
Comprehensive community-based program for early detection and intervention to reduce burden of CKD and CVD is feasible in Nepal, with fewer resources. Networking of health care setup and engaging community helped to adhere follow-up and treatment.

Surgical Experience with Cardiac Myxomas

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INTRODUCTION

Primary cardiac tumours are rare with autopsy incidence of less than 0.1 percent. Myxomas are the most common primary cardiac tumours. We present our experience on surgical treatment of such tumours.

METHODS

Since 2001, thirty two patients underwent surgical intervention for cardiac myxomas at our centre. Mean age was 48.7 ± 17.2 years. Majority, 25 patients were female. Twenty eight patients had left atrial myxoma and remaining 4 patients had right atrial myxoma. Surgical excision of tumour was done under cardiopulmonary by-pass and cardioplegic cardiac arrest.

RESULT

Complete excision was possible in all cases. Biatrial approach was used for left sided myxomas while right sided myxomas were excised via right atrial approach only. The resulting defect in interatrial septum was repaired with either pericardial patch or direct closure. There was no operative mortality. All patients were symptoms free and free from recurrence on follow-up echocardiography.

CONCLUSION

Surgical excision of cardiac myxomas is possible with excellent surgical outcome.

Initial Experience of Transesophageal Echocardiography in NAMS Bir Hospital

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INTRODUCTION

In 1976, Frazin and colleagues first attached a single crystal M-mode ultrasound transducer to the tip of a cable for esophageal imaging. Since that time, improvements in ultrasound technology coupled with miniaturization of transducers and the development of soft flexible tubing have led to a virtual exponential growth in the use of transesophageal echocardiography.

MATERIALS AND METHODS

A retrospective study that was conducted in the department of cardiology of NAMS, Bir Hospital, Kathmandu from April 2008 to March 2010. All patients with proper indications were subjected to transesophageal echocardiography. Instrument used was Toshiba xario (PST 50 AT, 5 MHZ). The procedure was explained to the patient, and an informed consent was obtained from the subjects. All data were analyzed by using statistical package for social science (SPSS) version 10 for windows. A careful history was obtained before performing the transesophageal echocar-diographic examination. In addition to a thorough cardiovascular history, specific questions was asked regarding past esophageal injury or surgery, swallowing difficulty, gastrointestinal bleeding, medications (e.g., aspirin), and allergies to medications (e.g. lidocaine).To minimize the risk of aspiration during the procedure the patient had nothing by mouth for at least four hours and preferably six to eight hours before the procedure.

RESULTS

A total of 51 patients were included in the study. Among the 51 patients 29 (56.8%) were female and 22 (43.2%) were male. Mean age was 38+/-15.1 (range 12-77 years). Atrial septal defect were 25 (49.0%), Normal were 11 (21.6%), Left atrial clot were 4 (7.8%), Constrictive Pericarditis were 4 (7.8%), Right atrial Myxoma were 3 (5.9%), Prosthetic valve were 2 (3.9%), Pericardial cyst was 1 (2.0%), and Vegetation was seen in 1 case (2%).

In reported series, the incidence of major and minor complications is 2% to 3% with most being minor complications. Major complications (death, esophageal perforation, significant arrhythmias, congestive heat failure, and aspiration) occur with a frequency of 0.3%, with a reported mortality of less than 0.01%. Reported minor complications include transient hypotension, hypertension (particularly with agitation), hypoxia, and arrhythmias (such as sustained ventricular tachycardia, nonsustained ventricular tachycardia, and transient atrioventricular block). Methemoglobinemia has been rarely reported due to the anesthetic spray and should be considered if cyanosis occurs. In this study most common problems were nausea and vomiting in 22 cases (43.1%) during procedure. Sore throat was in 3 cases(5.8%) after the procedure. Ventricular premature contractions were seen in I case(1.9%). The improved resolution and anatomic detail provided by transesophageal echocardiography, as compared with transthoracic echocardiography is what makes it such a powerful diagnostic tool. However, this can also lead to misinterpretation of normal structures.

CONCLUSION

Transesophageal echocardiography is a safe outpatient procedure. Viscous two percent lidocaine topical anesthesia was adequate for the procedure. Common indication for Transesophageal echocardiography was to confirm Atrial septal defect and Left atrial clot. Complications of Transesophageal echocardiography was very few. Misinterpretation of normal structures are best minimized by the experience of the operator.

Radiofrequency Catheter Ablation of Supraventricular Trachycardias In Nepal

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INTRODUCTION

Shahid Gangalal National Heart Centre (SGN-HC) is the first and the only one facility providing electrophysiological studies (EPS) and radiofrequency catheter ablation (RFCA) for supraventricular tachycardia (SVT) in Nepal. The first RFCA for SVT in Nepal was performed on 13th October 2003 with portable EP lab (EP Tracer Johnson and Johnson). To date, a total of 614 RFCA procedures for SVT have been performed in SGNHC. The retrospective analysis of this patients population has provided an opportunity to narrate our initial experience regarding baseline characteristics, EP findings, immediate and follow up outcomes and complications.

METHODS AND SUBJECTS

This study includes 614 subjects with SVT who underwent RFCA in SGNHC in between 13th October, 2003 and 31st August, 2010. The patients baseline characteristics, EP findings, immediate outcome, follow up outcome and complications were obtained from the hospital registry. Among these 614 subjects, 215 were male (35%) and 399 were female (65%). The age range was 12-85 years. The follow up period was from a maximum of 105 months to minimum of one month.

Before the procedure, the AV nodal blocking agents such as beta-blockers and verapamil were discontinued for at least five half lives and amiodarone for two weeks. The procedures were performed in Philips 5000H cath lab. Using EP Tracer (Johnson and Johnson) EP lab system. Diagnostic catheters were placed through the right and left femoral veins into RA, Bundle of HIS region and RV apex. A coronary sinus catheter was inserted through the internal jugular vein. Left heart catheterization was performed through femoral artery route or through the tans-septal puncture mode via the femoral vein. After the programmed stimulation and electrophysiological maneuvre, the reentrant loop of SVT was identified and radiofrequency energy was applied (using Stockhart Ablator) at the relevant anatomic area. All the patients were discharged at very next day and kept on aspirin and/and or clopidogrel for 6 weeks.

RESULTS

Among 614 subjects, 271 patients (44.1%) had atrioventricular nodal reentrant tachycardia (AVNRT) with female preponderance (72%). 258 patients, out of 271 were typical AVNRT (75.2%) and 13 were atypical AVNRT (4.8%). All 271 patients had undergone RFCA successfully without any relapse till date. 320 patients (52.1%) had accessory pathways, male 174 and female 146. 4 patients had typical Atrial flutter, and all of them

had undergone RFCA successfully, without relapse in follow up period.

Among 320 patients with accessory pathways, 219 (68%) patients manifested W-P-W, while 101 (32%) had concealed accessory pathways. Left sided pathways were found in 203 patients (63.4%), Right sided pathways were found in 47 patients (14.7%), and septal pathways were found in 70 patients (21.9%).
Almost 64% of the left sided pathways were manifested as W-P-W Syndrome, and 87% of right sided pathways were manifested as W-P-W; left lateral accessory pathways was most common pathways, i.e. 52% of total accessory pathways. 2 patients had Mahaim pathway and 2 had coronary sunus diverticulum. 10 patients had multiple pathways. The male female ratio of manifest W-P-W was 52% to 48%, where as the male female ratio of concealed AP was 60%-40%.

RFCA was not attempted in 6 patients as they had antero-septal and or parahisian pathways and patients did not give consent due to the risk of heart block. RFCA was not successful in 13 patients due to technical regions. Among these 614 successful ablations, tachycardia recurred in 5 cases (around 1%); all were accessory pathways (one mid-septal AP and 4 right sided APs). 12 patients had reappearance of delta waves without recurrence of tachycardia. 4 patients with typical atrial flutter had successful ablation. Likewise one had successful ablations for permanent junctional reciprocating tachycardia (PJRT) and one had successful ablation for long right atrial tachycardia.

In this series, severe vaso-vagal syncope occurred in one elderly woman (needed mechanical ventilation), major hematoma in one (needed surgical intervention), and minor hematoma in 4 and reversible limb ischemia in one patient and one 2:1 AV block. There was no event of death, cardiac tamponade, stroke or malignant arrhythmia requiring DC shock.

CONCLUSION

In our series, the success rate of RFCA in AVNRT and left accessory pathways is very high (>99%), where as the success rate in right sided and septal pathways is around 90%. Overall, EPS and RFCA procedures can be safely done in our centre with immediate and long term high success rate and minimal complications.

Outcome of Coronary Bypass Surgery in Private set up in Nepal

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BACKGROUND

Cardiac Surgery is an emerging speciality in Nepal. First Open Heart Surgery in Private set up was performed by our team in May 2003. Ever since this program has been a complementary one to the already existing strong public sector programs.

OBJECTIVES

To review the outcome of Coronary Artery Bypass in a private hospital set up.

MATERIALS AND METHODS

This is a retrospective analysis of the patients operated in Norvic International Hospital over the period of the last seven years (2003-2010). The data were collected from hospital records.

RESULTS

Total of 176 cardiovascular surgeries were performed by our team in this hospital of which 97 patients underwent Coronary Artery Bypass Grafting (CABG). Among the patients who underwent CABG 40% had double vessel bypass,38% had triple vessel bypass, 4% had four vessel bypass and one had combined CABG and Aortic Valve Replacement. Sixty seven patients had on-pump bypass and the remaining off pump. There were two deaths in the series in the early years but none in the last 50 cases. Total of four patient required re-exploration for bleeding and one required prolonged ventilation.

CONCLUSION

Cardiac surgery can safely be performed in a private setting of Nepal.

Fast-Track Cardiac Anaesthesia: A Retrospective Review of 6 months Period at SGNHC

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BACKGROUND

With the evolution of anesthesia and surgical procedures, fast track cardiac anaesthesia (FTCA) has gained an increased interest, mainly based on the possibility of reducing health costs seemingly without compromising patient care and has been implemented at SGNHC.

OBJECTIVE

The purpose of this study is to evaluate the status of FTCA after open heart procedures.

METHODS

After standard anaesthesia and surgical technique, we retrospectively reviewed the duration of mechanical ventilation, length of ICU stay, reintubation, and incidence of in hospital mortality in 277 adult patients undergoing open heart surgery during 6 months period at SGNHC.

RESULTS

The median time of the extubation was 6 hours, median days of the ICU stay was 3 days. Five cases were reintubated because of the respiratory failure which is about 1.8% out of 277 cases. Out of 277 eight patients had to be re-explored for the postoperative bleeding and 7 patients (2.5%) died of sepsis and low cardiac output syndrome.