Conquering Heart Diseases in the Himalayan Region
International Conference (2-3 November 2012)
Special Issue

Editorial Team

Cardiac Society of Nepal (Estd. 1998)

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Editorial

Cardiovascular Professionals for Services Provision in Nepal

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Cardiovascular Diseases (CVDs) is increasing globally, accounting for 33% of deaths worldwide. It is becoming an epidemic in low-income countries and is projected to increase substantially over the next two decades. World Health Organization (WHO) predicted that between 1990 to 2020, CVDs will increase by 55% in the world. Nepal, one of the low income countries, is also facing high burden of CVDs affecting elderly to young, men and women, rich and poor (WHO,2011). It leads to one in five deaths in developing countries and additionally, 25% of all deaths is attributable to cardiovascular causes in Nepal.

The number of patients with heart disease and stroke attending hospitals, health facilities are growing each day. This situation is not only prevalent in urban areas but is also increasing in rural and semi-urban areas. Literature review shows that the conditions and risk factors such as hypertension, diabetes mellitus, smoking, obesity, dyslipidemia are reported to be increasing in various population based cross sectional studies in rural and urban areas (eg. Dharan, Kathmandu, Dhulikhel) across the country.

Nepal is facing an epidemiological transition creating new challenges in public health system. Although, Nepal has experienced steady improvement in health outcomes and impacts during the last two decades (NHSIP, 2010), the burden of communicable diseases is still high (NHRC, 2010). A hospital-based study found that out of total admitted patients, 36.5% suffered from non-communicable diseases. This shows that Nepal has double burden – communicable as well as non-communicable disease.

Though, the number of risk factors, morbidity and mortality due to heart diseases and stroke are rising, the awareness, diagnosis, treatment, and prevention programs for these diseases are limited. The problem of CVDs is getting into an iceberg phenomenon: huge portion of population having cardiac risk factors are unaware and undetected. Majority of the patients whor are diagnosed is also incidentally. General physician, medical doctors, paramedics and few cardiologists and cardiothoracic surgeons are involved in the care of these diagnosed cases.

Even though the burden of cardiovascular problems has been increasing, the required infrastructure for treatment, required number of cardiovascular professionals have not been developed and trained proportionately within the country. Few number of physicians and surgeons having fellowship and special training in cardiology and cardiothoracic surgery have been providing the cardiac services since the beginning. They were the pioneers starting cardiovascular services in the country. For last few years, cardiologists and cardiac surgeons with the degrees like, DM, MD Cardiology, MS, MCh Cardiovascular and Thoracic surgery and Fellowships are growing and providing specialized care with interventional and surgical services.

The population based study showed the prevalence of CVD is 5.7% which will be about 1.6 million people at one time. The available Cardiovascular professional specialist within Nepal, according to the registration of professional body, Cardiac Society of Nepal is 92. Among these specialists, majority are working in Kathmandu, the capital city, and few in other major cities like Pokhara, Biratnagar, Chitawan, Birganj and Dharan. The proportion of cardiovascular specialists to the cardiac patients in Kathmandu is about 1: 2,500 and the proportion of cardiovascular specialists to the general population is about 1:45,000. This is worse in other cities and there is virtually none in rural areas.

There is severe scarcity of cardiac doctor in each level of health facilities from zonal hospitals to primary level. This fact signifies the challenge in getting proper management of CVDs. Beside the Cardiac Physicians and Surgeons, the specialized nurses, public health exports, anesthesiologists, perfusionists, imaging specialists are also required to optimize the quality services.

Most of the cardiovascular specialists in recent years, (DM, MD Cardiology MS, MCh cardiothoracic surgeon) have been trained from countries such as India, Bangladesh, China. Significant number of other physicians has fellowship from different colleges and institutions such as Russia, Asia Pacific Society of Cardiology, American College of Cardiology, European society of Cardiology etc. Even though the specialized training in cardiology is of great demand, there was no specific course within Nepal few years back. With the establishment of few specialized cardiovascular centers in different hospitals and medical colleges (e.g. Bir Hospital, Shaheed Gangalal National Heart Centre, Manamohan Cardio Thoracic Centre, Norvic International Hospital, Dhulikhel Hospital, BPIKHS: Dharan, College of Medical Science, Bharatpur and others), DM Cardiology, MCh Cardiothoracic Surgery course have been initiated recently. National Academy of Medical Sciences, Bir Hospital, Tribhuvan University, Institute of Medicine and Kathmandu University School of Medical Sciences have started MCh Cardiothoracic Surgery and DM Cardiology since 2008. The number of seats for this course is limited, although the need of human resources in cardiovascular services is huge.

The development of academic and training programs related to cardiovascular diseases in Nepal in the last few years has been encouraging, although by no means sufficient. There needs to be aggressive expansion of cardiac care facilities, training and research opportunities supported by strong and effective plans and policies. The state as well as public and private institutions in all levels and capacity should gear up for this, not as rivals but as partners dedicated for a common cause.

Normal Echocardiographic Parameters of Healthy Adult Individuals working in National Heart Centre

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Abstract

Background

Studies evaluating potential differences in normal cardiac dimensions and body mass indices of various ethnic populations using 2D echocardiography have reported variations based on gender and ethnicity. Currently, accepted echocardiographic reference values are from US studies, and the limited information is available on Nepalese population. The purpose of this study was to derive population-based reference values for two-dimensional (2D) guided M-mode echocardiographic dimensions and left ventricular mass of adult Nepalese that can be applied in epidemiologic studies, clinical trials and clinical practice.

Methods

97 individuals were randomly selected, out of 502 staffs working in our hospital, who were over 18 years of age and were free of cardiovascular disease. Subjects underwent   M-mode and 2D echocardiogram with color Doppler study. Reference values were derived for end-diastolic and end-systolic left ventricular internal dimensions, left ventricular wall thickness, left atrial dimension, aorta, LV mass. Measurements were described by mean, standard deviation and 95% reference range.

Results

Echocardiographic measurements were within standard normal limits. The measurements of aorta, left atrium, inter-ventricular septum, left ventricle in systole and diastole, left posterior wall and left ventricular mass, adjusted or not for body surface area, were significantly higher in males. Several echocardiographic measurements, adjusted or not for anthropometric measurements, had different mean and range than the reference limits in US-based studies.

Conclusion

The means and range for the measurements of left atrium volume, left ventricular diastolic dimension and left ventricular mass found in this survey were lower than those indicated by the international literature and accepted as normal limits. The results of this study strongly indicate the need for a larger scale study to further establish ethnic-specific and gender-specific echocardiographic reference values for the Nepalese population.

Keyword Echocardiography, cardiac dimensions, National Heart Centre.

Background

All the Echocardiographic reference parameters that we use to compare during Echocardiographic studies are derived from those defined in the western world. We till date do not have a proper reference range based on studies conducted in Nepal or South Asia itself. It is a well knonwn fact that that the population in south asia has a very much different genetic and physical make up as compared to the population in the west. The difference in the body size in itself brings into question the reference range that we quote as normal values derived from studies conducted in the west. We have thus made an effort to study an healthy adult population in Nepal, beginning with a pilot study enrolling staff members of the National Heart Centre for recording normal echocardiographic parameters.

MATERIALS AND METHODS

Study samples

For our study, 126 apparently healthy subjects were randomly selected from the total of 362 Staffs of Shahid Gangalal National Heart Centre and 140 Outsourced staffs working in the hospital. Out of these subjects, 29 subjects were excluded due to evidence of heart disease or other systemic disease. Among them, 15 had Hypertension, 4 subjects had Rheumatic Heart Disease, 6 had poor echo window and 4 had diabetes mellitus.

Ninety seven normal subjects consisted of 50 males and 47 females. Their ages ranged from 18 to 52 years in men and women (mean±SD, 27.9±6.6 years in men and 28.7±6.7 years in women).

Study Parameters

Baseline measurements included measurements of blood pressure, weight (kilograms); height (centimeters) and body surface area (BSA) were calculated using the Mosteller formula[1].

Two-dimensionally and M-mode, ECG guided, echocardiograms were recorded using available equipments VIVID 7 (General Electric Company) and IE33 (Philips Company) instruments, with 1.5-4.0 MHz transducer. M-mode recordings of the left ventricle were obtained with the subject in the supine and left lateral decubitus position. Measurements on the echocardiograms were obtained according to the recommendations of the American Society of Echocardiography[2]. The internal dimensions of the left ventricle at end diastole were measured at the onset of the QRS complex. The thickness of the ventricular septum and posterior wall were measured in the same portion of the record used to measure the left ventricular internal dimensions. Two measurements were made and average values were taken.

Left ventricular mass was calculated using the formula from Devereux et al.[3,4]

Global left ventricular function was assessed from 2D-echocardiography images and any patient showing segmental hypokinesia, valvular heart disease, or myocardial hypertrophy was excluded.

Aorta, left atrium, interventricular septum, and posterior wall thickness, left ventricle in systole and diastole, and the right ventricle were evaluated. The beginning of the QRS complex (first deflection) was used as the area to obtain the measurements at the end of diastole and maximal incursion of the septal movement for the measurements of the systolic dimension of the left ventricle. The cavity and wall thicknesses were measured at the level of the chordae of the mitral valves.

Statistical methods

The parameters in our study were described as means and standard deviation. The analyses were done in the entire sample and stratified by gender. We present the P values, assuming statistical significance of P less than 0.05 and 0.001.

Reference ranges for each measurement were calculated using 95% reference range (mean±2standard deviation).

Results

The characteristics of the study population of 47 women and 50 men are summarized in Table 1.

Table 1: Characteristics of the individuals studied stratified by gender

	Male (n=50)		Female (n=47)		P Value
	Mean	**SD**	**Mean**	**SD**	
Age (year)	27.9	6.6	28.7	6.7	0.546
Height (m)	1.69	0.07	1.53	0.06	<0.001
Weight (Kg)	62.77	9.7	54.62	10.4	<0.001
Body Mass Index (Kg/m²)	21.80	3.45	23.32	4.15	0.52
Body Surface Area (m²)	1.71	0.14	1.51	0.15	<0.001
HR (bpm)	75.3	13.3	80.0	12.0	0.69
Systolic Blood Pressure (mmHg)	114.4	10.5	105.3	12.1	<0.001
Diastolic Blood Pressure (mmHg)	75.8	8.8	66.8	9.3	<0.001

Age, body mass index, and heart rate were similar in men and women. Height, body surface area, weight, the systolic and diastolic blood pressure was significantly higher in men.

The echocardiographic measurements are presented, according to gender, in table 2, including the values for left ventricular mass corrected by the body surface area.

The 95% reference range of the echocardiographic parameters calculated as mean±2standard deviation, are presented in table 3.

Table 2: Echocardiographic measurements in men and women

	Male (n=50)		Female (n=47)		P Value
	Mean	SD	Mean	SD	
LV Diastolic dimension (mm)	47.5	4.3	43.4	4.1	<0.001
LV systolic dimension (mm)	29.2	3.9	27.2	3.4	0.009
LV Posterior Wall Thickness (mm)	9.4	1.1	8.3	1.2	<0.001
IV Septum Thickness (mm)	9.6	1.1	8.3	1.1	<0.001
LA Dimension (mm)	35.0	2.9	32.8	3.9	0.002
ACS (mm)	15.6	2.7	16.3	2.2	0.175
Aortic Root (mm)	27.5	3.0	26.0	3.1	0.015
Ascending Aorta (mm)	17.6	3.7	15.1	2.5	<0.001
RV (Diastole, mm)	17.6	3.3	19.5	3.5	0.009
LV Mass (g)	158.32	27.93	115.55	2.91	<0.001
LV Mass/BSA (g/m^2)	92.39	15.01	75.85	15.77	<0.001
LA Volume (ml)	31.71	8.88	28.03	8.93	0.045
EF (%)	68.68	6.03	67.12	6.03	0.206

Table 3: 95% Reference Range of the measured parameters

	Male (n=50)		Female (n=47)	
	Lower Limit	Upper Limit	Lower Limit	Upper Limit
LVDiastolic dimension (mm)	38.9	56.1	35.2	51.6
LV systolic dimension (mm)	21.4	37	20.4	34
LV Posterior Wall Thickness (mm)	7.2	11.6	5.9	10.7
IV Septum Thickness (mm)	7.4	11.8	6.1	10.5
LA Dimension (mm)	29.2	40.8	25	40.6
ACS (mm)	10.2	21	11.9	20.7
Aortic Root (mm)	21.5	33.5	19.8	32.2
Ascending Aorta (mm)	10.2	25	10.1	20.1
RV (Diastole, mm)	11	24.2	12.5	26.5
LV Mass (g)	102.46	214.18	109.73	121.37
LV Mass/BSA (g/m^2)	62.37	122.41	44.31	107.39
LA Volume (ml)	13.95	49.47	10.17	45.89
EF (%)	56.62	80.74	55.06	79.18

The dimensions of the aorta, left atrium, interventricular septum, left ventricle in systole and diastole, posterior wall, and left ventricular mass, corrected or not, were significantly higher in men.

The values of flow velocity and flow gradient across respective valves in our study is presented in the tables 4 and 5 respectively.

Table 4: Flow Velocity across respective valves

	Male (=50)		Female (=47)	
	Mean	SD	Mean	SD
Mitral Inflow E (m/s)	0.90610	0.205043	1.06209	1.104836
Mitral Inflow A (m/s)	0.56716	0.115506	0.70651	0.948655
Mitral Inflow Mean (m/s)	0.3875	0.07559	0.6101	0.76596
Mitral Inflow (E/A)	1.6492	0.424	1.6386	0.05715
Aortic Valve Peak (m/s)	1.1376	0.234132	1.33738	1.352025
Aortic Valve Mean (m/s)	0.63674	0.116967	0.78385	0.717203
Tricuspid Valve Peak (m/s)	0.66934	0.149623	0.74651	0.737558
Tricuspid Valve Mean (m/s)	0.4351	0.108847	0.50617	0.547763
Pulmonary Valve Peak (m/s)	0.93166	0.12127	1.01562	1.021901
PulmonaryValve Mean (m/s)	0.55180	0.072790	0.65423	0.684833

Table 5: Flow Gradient across respective valves

	Male (=50)		Female (=47)	
	Mean	SD	Mean	SD
Mitral Inflow E (mmHg)	3.37	1.202	3.38	1.236
Mitral Inflow A (mmHg)	1.32	0.587	1.52	0.789
Mitral Inflow Mean (mmHg)	0.87	0.244	1.15	0.466
Aortic Valve Peak (mmHg)	5.47	1.577	5.30	2.062

Aortic Valve Mean (mmHg)	2.24	0.693	2.36	0.923
Tricuspid Valve Peak (mmHg)	1.87	0.835	1.79	0.800
Tricuspid Valve Mean (mmHg)	0.87	0.478	0.97	0.450
Pulmonary Valve Peak (mmHg)	3.52	0.933	3.21	1.290
Pulmonary Valve Mean (mmHg)	1.49	0.428	1.50	0.583

The velocity of individual segments determined with tissue Doppler echocardiography is presented in table 6.

Table 6: Flow Velocity of individual segments determined with Tissue Doppler Echocardiography

	Male (=50)		Female (=47)	
	Mean	**SD**	**Mean**	**SD**
Basal Septum S	0.091144	0.140305	0.082974	0.0151679
Basal Septum E'	0.12611	0.024261	0.34602	1.513618
Basal Septum A'	0.08469	0.023595	0.07426	0.022445
Basal Lateral S	0.115406	0.0316423	0.102664	0.0246728
Basal Lateral E'	0.20114	0.143907	0.15266	0.035484
Basal Lateral A'	0.11532	0.209725	0.07990	0.027035

Discussion

Generally, reference range in different ethnic groups is slightly different[5]. Average height, weight, BMI and BSA are less in Nepalese than in western population. The smaller physique of Asians may highlight the potential need to assess the validity of using separate cardiac reference data for this ethnic group. In Nepal, clinicians are using reference range for echocardiographic values from western literature and books. In clinical practice, it has been long felt that reference range from western data cannot be fully applied in our scenario.

The primary and derived echocardiographic parameters in men and women in the Nepalese population differ significantly from each other. In this study, it has been found that the reference range of most echocardiographic parameters are slightly different as compared with those used in the western studies and are similar to those found in Asian countries.

We plan to conduct a larger population based study to establish the reference range of echocardiographic parameters in Nepalese population. This pilot study is the infant step in this direction.

Study limitation

This study is small study consisting of randomized populations of people working in Shahid Gangalal National Heart Centre and the study population cannot be the representation of whole Nepalese population. Relatively young patients were the subjects in this study and the sample size was also small.

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Balloon Pulmonary Valvuloplasty in patients with Congenital Valvular Pulmonary Stenosis

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Abstract

Background

Congenital valvular pulmonary stenosis (PS) accounts for most of the etiology of PS, and constitutes about 5 to 10% of all congenital heart disease. Balloon Pulmonary Valvuloplasty has become the choice of treatment for valvular PS since the first series reported by Kan et al in 1982[4] and has almost replaced surgical valvotomy in pediatric patients. The purpose of this study was to investigate the immediate results of balloon valvuloplasty in patients with congenital valvular pulmonary stenosis.

Method

We analyzed hemodynamic data of 122 patients who underwent balloon pulmonary valvuloplasty (ages14days- 50 years mean 25 years). Single-balloon technique was used. Right ventricle systolic pressure and pulmonary valve Peak-to-peak systolic pressure gradient were recorded before and after balloon dilatation of pulmonary valve.

Result

Right ventricle systolic pressure decreased from 128±44.9 to 60±24.9 mmHg (p <0.001) and pulmonary valve peak-to-peak systolic pressure gradient decreased from 89±38.6 to 45 ± 22.4 mmHg (p <0.001). No major complication or mortality was noted.

Conclusion

Balloon pulmonary valvuloplasty is a safe and effective treatment for patients with congenital valvular PS.

Keywords: Pulmonary stenosis, Balloon valvuloplasty

Introduction

Congenital valvular pulmonary stenosis (PS) accounts for most of the etiology of PS, and constitutes about 5 to 10% of all congenital heart disease. The first use of a balloon catheter was reported in the early 1800s when a catgut balloon was used to dilate the urethra.[1] In 1979, Semb, et al. first introduced nonsurgical dilatation of stenotic pulmonary valve by balloon technique in a pediatric patient,[2] and later in 1982, Pepine et al first described successful balloon valvuloplasty in an adult patient.[3] BPV has become the choice of treatment for valvular PS since the first series reported by Kan et al in 1982[4] and has almost replaced surgical valvotomy in pediatric patients. The double-balloon technique was first reported by Al Kasab et al in 1987.[5] The use of two balloons may permit a small amount of blood flow between them even during full dilatation, and leads to fewer hemodynamic changes.[6] The use of Inoue balloon, which was first reported by Lau et al[7] also has advantages over the single-balloon technique because it is size-adjustable, making stepwise dilatation possible, and due to its short and self-positioning characters, minimizing the possible injury to RV infundibulum or main PA.[8] But Inoue balloon has disadvantages including necessity of a large sheath, rigid property and costly expense.

It is recommended that the indications for intervention should include the following two criteria:

1. Patients with exertional dyspnea, angina, syncope, or presyncope.

2. Asymptomatic patients with normal cardiac output (estimated clinically or determined by catheterization) and transvalvular peak systolic pressure gradient more than 30 mmHg.[9]

We used Single-balloon technique and here we present our experience of balloon valvuloplasty for patients with congenital PS.

Methods

Between March 2004 and September 2012, balloon pulmonary valvuloplasty (BPV) was performed on 122 patients with congenital valvular PS (59 men and 63 women; age ranged from 14days to 50, mean 25 years) in Shahid Gangalal National Heart Centre. Doppler echocardiography was performed routinely before BPV to evaluate structure heart diseases. Clinically, all patients were symptomatic with mean NYHA II.

Tecnique of pulmonary balloon valvulopasty

Vascular access via femoral vein, right ventricular (RV) angiography was done with a Berman balloon catheter initially. Hemodynamic data including RV pressure and pulmonary artery (PA) pressure were documented during catheterization with Swan-Ganz catheter. BPV was performed basically according to the method of Kan et al[5] and Al Kasab et al[6] briefly; a long J tipped exchange guide wire (260 cm) was used to advance the balloon to the pulmonary valve site. Single-balloon technique was performed via femoral vein, with the balloon sized about 25% greater the annulus diameter. Usually, repeated balloon dilatation 2-3 times was performed and each inflation-deflation time was no more than 30 seconds.

Fig1: Successful dilatation was indicated by the disappearance of the waist around the balloon under cineangiography.
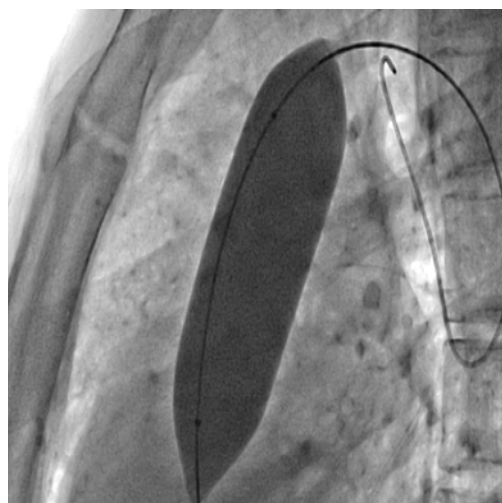
Fig2: Post-stenotic dilatation of the main PA and rapid jet across the stenotic valve.
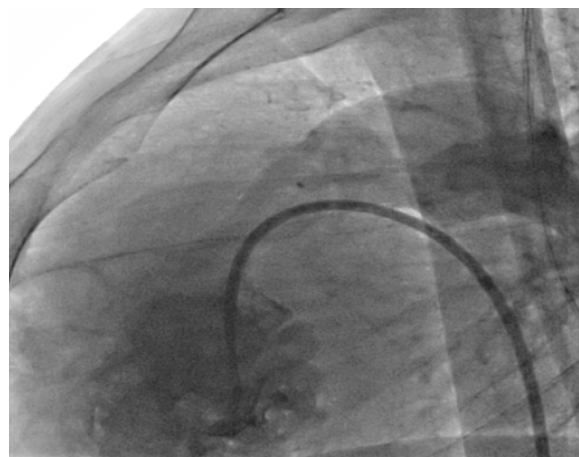
All measured hemodynamic values were expressed as mean ± SD (standard deviation). Paired Student's t test was used to compare data differences and p value <0.05 was considered to be significant.

Results

All patients had post-stenotic dilatation of the main PA and marked trabeculation of RV on right ventricular angiography. After balloon dilatation, the hemodynamic data were checked. After BPV, Right ventricle systolic pressure and pulmonary valve peak-to-peak systolic pressure gradient decreased from 128 ± 44.9 to 60 ± 24.9 mmHg (p <0.001) and 89 ± 38.6 to 45 ± 22.4 mmHg (p <0.001), respectively. There was no major complication, such as severe pulmonary regurgitation (PR) or death. One patient required emergent surgical management for tamponade due to laceration of main pulmonary artery. All patients were discharged the day after the procedure.

Discussion

Our results demonstrate that BPV is a safe and effective procedure in treating patients with congenital valvular PS. BPV has become the choice of treatment for valvular PS since the first series reported by Kan et al[5] in 1982, and has almost replaced surgical valvotomy in pediatric patients. Most authors suggested that balloon to annulus ratio should not exceed 30% due to the higher risk of severe PR or annular laceration. In most cases we used the balloon sized about 25% greater the annulus diameter. In our study, the results were: 53.12% reduction of RV pressure and 51% reduction of transvalvular pressure gradient on average which is slight lower to those of other centers (60% and 63%). Significant infundibular PS is a problem which may cause high residual pressure gradient after BPV. It was suggested by experts that myomectomy should be performed if immediate post-procedure RV pressure still exceeds 100 mmHg or pressure gradient more than 80 mmHg. We have a ten patients who had high pressure gradient even after a repeat BPV were undergone surgical vulvotomy.Cases of infundibular spasm "suicidal Right ventricle" after BPV were reported by Al-Kasab et al.[6] However, among our patients, we did not find such conditions occurring. In addition, RV infundibular hypertrophy secondary to PS usually regresses gradually after the Procedure of BPV, which may be accelerated by the administration of oral beta-blockers. We prescribed Propranolol routinely to all patients after BPV with infundibular hypertrophy secondary to PS.

Conclusion

BPV is a safe, effective and reliable treatment for patients with congenital valvular PS. The pulmonary balloon valuloplasty is the treatment of choice for patients with symptomatic pulmonary stenosis and the single balloon is the traditional technique.

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Predictors of poor cardiac recovery pattern after aortic declamping in consecutive cardiac surgery cases.

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Abstract

Background

Poor Cardiac recovery following aortic declamping in cardiac surgery is associated with increased morbidity and mortality. This study aims to identify the predictors of poor cardiac recovery pattern after aortic declamping in consecutive cardiac surgery cases.

Methods

A prospective study was conducted from February 2011 to November 2011in elective cardiac surgical cases in First Affiliated Hospital of Medical College of Xi'an Jiaotong University. Single factor and subsequent logistic regression analysis was performed to identify the predictors of poor cardiac recovery pattern after aortic declamping.

Results

Of the 150 patients enrolled in the study, 38% had good cardiac recovery while 62% had poor cardiac recovery after aortic declamping. Of the studied variables, those associated with significant outcome (P value <0.05) in all the subgroups were NYHA (New York Heart Association) classification (1 or 2 vs. 3 or 4) , Control group vs. blood cold cardioplegia, Route of cardioplegia, Age, Cardiopulmonary Bypass time groups, aortic clamping duration, ejection fraction and presence of pulmonary hypertension. From multivariate logistic regression analysis for predictors of cardiac recovery pattern, it was found that Age more than 40 years, NYHA category 3 or 4, ejection fraction less than 55%, aortic clamping time 60-120 minutes were significantly associated with poor cardiac recovery pattern. Cardiopulmonary bypass time however was not significantly associated as independent predictors of poor cardiac recovery pattern after aortic declamping.

Conclusion

Age more than 40 years, NYHA category 3 or 4, ejection fraction less than 55%, aortic clamping time 60-120 minutes are independent predictors of poor cardiac recovery pattern after aortic declamping.

Key words cardiac recovery pattern, predictors, aortic declamping.

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Introduction

Since the first successful closure of Patent Ductus Arteriosus by Dr. Robert Gross in 1938[1], cardiac surgery as a separate surgical entity has evolved well. Invention and refinement of Cardio pulmonary bypass (CPB) technology has made repair of wide varieties of cardiac conditions possible.[2,3,4] With use of CPB technology, machine can temporarily overtake the function of heart while heart is made to stop beating. At the initiation of weaning from CPB, after rewarming, the clamp on the aorta is taken out. With this, heart also takes part in pumping blood alongside CPB machine in parallel circuit. With aortic declamping, coronary perfusion ensues and heart begins to beat on its own. The way the heart begins to beat during this phase is termed as cardiac recovery pattern. Cardiac recovery pattern can be classified as good and poor based on two important factors. The first one is the way sinus rhythm is reverted (as spontaneous, with use of pacemaker, and with use of defibrillator). The second method is by noting the time taken to revert to sinus rhythm.

Although there is some scarcity on the studies of poor cardiac recovery pattern immediately following aortic declamping, the knowledge of which will benefit to decrease the morbidity and mortality of patients. After aortic declamping, ventricular fibrillation and other tachyarrhythmias are common. It has been found that in about 30-40% of cases ventricular fibrillation occurs.[5] Metabolic changes during such fibrillation or the counter shock treatment may contribute to myocardial injury[6]. Knowing the high risk groups for poor cardiac performance recovery pattern helps in anticipating that and making adequate preventive and therapeutic measures to make the damage minimum and thus increasing the benefits of surgical procedure.

Multivariate logistic regression analysis is a statistical tool for analysis of multiple predictors to know about their relative influence on the outcome. Also they can be used to identify independent predictors for the outcome. [7,8]

This study aims to delineate the factors that have impact on this recovery pattern after aortic declamping in cardiac surgical cases.

Patients and Methods

Data source

We conducted a prospective study of the cardiac surgical cases performed in the First affiliated hospital of Xi'an Jiaotong University, Xi'an, P. R. China during the time period of February 2011 to November 2011. Data in headings of general information of patient, history and examination, investigations, operative findings were recorded in set questionnaire. Patients with complex diagnosis, with diagnosis belonging to multiple group (e.g. septal disease as well as valvular heart diseae) were not included in the study. Similarly the patients undergoing emergency cardiac surgery or repeat cardiac surgery were excluded in the study. Blood cold cardioplegia has been used in all the cases except the control group.

Explanatory variables

Data on age of the patient, sex of the patient, diagnosis, operation, duration of illness, NYHA classification, blood pressure on admission, blood investigations (Na, K, Ca, Urea, Creatinine) were recorded. In Chest X-ray presence of filling of pulmonary conus and presence of cardiomegaly (>50% cardiothoracic ratio) will be noted. Presence of preexisting rhythm disturbance were identified from baseline ECG. From a preoperative echocardiogram, ejection fraction, fractional shortening and presence of pulmonary hypertension were noted. As most of the patients (with diagnosis other than coronary artery disease) were not subjected to Cardiac catheterization, presence of pulmonary hypertension were taken into consideration from trans thoracic echocardiography report as per guidelines of Task Force for the Diagnosis and Treatment of Pulmonary Hypertension of the European Society of Cardiology[9]. This guideline states that there is high likelihood of pulmonary hypertension if tricuspid regurgitation velocity is >3.4m/s, Pulmonary artery systolic pressure 0.50mm Hg. Regarding presence of coronary artery disease, >50% occlusion in one or more major coronary artery branch were adopted.

Regarding groups of diagnosis, there were four groups. Septal defects included congenital heart diseases such as Atrial Septal Defect, Ventricular Septal Defect, Patent Ductus Arteriosus. Valvular heart disease included diseases of any one or more heart valves. Coronary heart disease included disease of one or more coronary arteries undergoing on pump or off pump coronary bypass surgery.

The duration of anesthesia, surgery, CPB and aortic clamping time and type of anesthesia and cardioplegia were recorded intraoperatively.

Study outcomes

Cardiac performance recovery pattern is grouped into three headings as recovery to sinus rhythm being spontaneous, requiring pacing, and requiring defibrillation respectively. Similarly, the recovery pattern is also grouped based on time taken to return to spontaneous rhythm.

Cardiac recovery pattern classification:

Cardiac recovery pattern was classified based on two outcomes. The first one was based on need of pacing and/or defibrillation before return to sinus rhythm. Based on this parameter, the cardiac recovery pattern was classified into class A1 (No need of pacing and defibrillation), class A2 (Need of pacing), class A3 (Need of defibrillation with/without need of pacing).

The other classification was based on the time taken to return to sinus rhythm. The cardiac recovery pattern was classified into class B1(Less than 5 minutes taken for return to sinus rhythm), class B2 (5-10minutes taken for return to sinus rhythm, and class B3(More than 10 minutes taken for return to sinus rhythm). If the cardiac recovery pattern was both A1 and B1, then it was considered as good cardiac recovery(R1), while all other recovery pattern (A2 or A3, and B2 or B3) were considered as poor cardiac recovery(R2).

Statistical analysis

Database collection were done in Microsoft access 2007 edition and statistical analysis was done in statistical software (version 13.0;SPSS,Inc;Chicago,IL). Initially single factor analysis was done on the proposed predictors. Based on this analysis variables were selected for multivariate logistic regression analysis to identify independent predictors of poor cardiac recovery pattern. The level of significance taken was <0.05.

Results
Basic parameters:

One hundred and fifty patients were enrolled in this study. Of them, 43% were patients with valvular disease, 30 % with septal disease, 16.7% coronary artery disease and 10.3 % with other diseases. The mean duration of illness was 5.3 years, mean age was 39.33 years. Regarding the intraoperative variables, the mean duration of cardio pulmonary bypass was 112.41 minutes, and that of aortic

clamping duration was 73.98 minutes. Similarly, the mean time taken to regain sinus rhythm was 7.39 minutes, mean ejection fraction was 58.77% and mean fractional shortening was30.38%.

Single-factor analysis results

Among 150 patients 57cases (38%), had good cardiac recovery pattern (R1 Group) while 93 cases (62%) had poor cardiac recovery pattern. Table 1 shows the mean values of continuous variables in R1 and R2 groups. It was observed that the mean values of NYHA group, age, cardiopulmonary bypass and aortic clamping duration were higher in R2 group while mean ejection fraction was lower in R2 group and all these differences were significant at $P<0.05$.

Table 1: Mean values of continuous variables in R1 and R2 groups.

Variables	R1 Group/ Good cardiac recovery pattern (Mean)	R2group/ Poor cardiac recovery pattern (Mean)	P Value
Duration of illness	6.20	4.85	0.205
NYHA classification	1.82	2.32	**0.000**
Age	27.30	46.71	**0.000**
Duration of Cardio Pulmonary Bypass (Minutes)	81.32	131.47	**0.000**
Aortic Clamping Duration (Minutes)	44.65	91.96	**0.000**
Ejection Fraction (Percentage)	60.77	57.54	**0.048**
Fractional Shortening	31.01	29.98	0.375

Table 2 shows the single factor analysis for predictors of poor cardiac recovery pattern. Of the studied variables, those associated with significant outcome (P value <0.05) in all the subgroups were NYHA classification, control vs blood cold cardioplegia, route of cardioplegia, age, Cardiopulmonary Bypass time groups, aortic clamping duration, ejection fraction and presence of pulmonary hypertension. Presence of pulmonary hypertension however yielded beneficial effect on cardiac recovery pattern as the odds ratio is less than 1.

Table2: Single factor analysis for predictors of poor cardiac recovery pattern

S.N.	Variable	Groups	R1 (Good cardiac recovery pattern)	R2 (Poor cardiac recovery pattern)	Odds ratio	P value
1	Diagnosis group	Septal diseases	29	16	Ref	
		Valvular disease	14	50	6.47	**<0.01**
		Coronary Artery Disease	5	20	7.25	**<0.01**
		Other disease	9	7	1.41	0.562
2	Duration	Less than 1 year	16	21	Ref	
		1-2 years	9	24	2.03	0.167
		More than 2 years	32	48	1.14	0.740

3	NYHA classification	1 or 2	53	62	Ref	
		3 or 4	4	31	6.625	**<0.01**
4	Type of cardioplegia	Control (No cardioplegia)	17	5	Ref	
		Blood cold	40	88	7.480	**<0.01**
5	Route of cardioplegia	Control group (No cardioplegia)	17	5	Ref	
		Antegrade	37	39	3.584	**<0.05**
		Both antegrade and retrograde	3	49	55.533	**<0.01**
6	Age	< 40 years	39	27	Ref	
		>= 40 years	19	66	5.296	**<0.01**
7	Sex	Female	29	39	Ref	
		Male	28	54	1.434	0.286
8	Cardiopulmonary Bypass Time Groups	Less than 60 minutes	14	5	Ref	
		60-120 minutes	38	42	3.095	**<0.05**
		More than 120 minutes	5	46	25.760	**<0.01**
9	Aortic Clamping duration	Control	17	5	Ref	
		Less than 60 minutes	19	10	0.947	0.937
		60-120 minutes	20	62	5.580	**<0.01**
		More than 120 minutes	1	16	28.80	**<0.01**
10	Aortic Clamping duration	Less than 60 minutes	19	10	Ref	
		60-120 minutes	20	62	5.890	**<0.01**
		More than 120 minutes	1	16	30.400	**<0.01**
11	Ejection fraction group	Normal i.e. >55%	47	55	Ref	
		Low i.e. <55%	10	38	3.247	**<0.01**
12	Fractional shortening	Normal i.e. >25%	42	62	Ref	
		Low i.e. <25%	15	31	1.400	0.367
13	Cardiomegaly in Chest X-ray	Absent	10	27	Ref	
		Present	47	66	1.923	0.116
14	Rhythm disturbances in ECG	Absent	10	10	Ref	
		Present	47	83	1.766	0.239
15	Features of Pulmonary hypertension (From echocardiography)	Absent	23	63	Ref	
		Present	34	30	0.322	**<0.01**

Multivariate logistic regression analysis results:

Table 3 shows the results of logistic regression analysis. We conducted such analysis amongst five groups viz. NYHA category (1 or 2 vs 3 or 4), age, cardiopulmonary bypass time groups, aortic clamping duration groups and ejection fraction groups. All these groups had significant odds ratio with respect to the reference group. The two groups viz route of cardioplegia and features of pulmonary hypertension group, despite having significant odds ratio, were not included in logistic regression analysis results pertaining to fact that these results can be due to confounding factors as they contradicted with clinical experiences.

Table 3: Multivariate logistic regression analysis for predictors of cardiac recovery pattern

Variable	Wald	S.E.	Odds ratio	Sig
Age (>40 years)	5.924	0.441	2.927	**<0.05**
NYHA (2 or 3)	4.613	0.683	4.332	**<0.05**

Cardiopulmonary bypass time groups
   <60 minutes
   60-120 minutes
   >120 minutes
	
	0.136
	3.253
		
		0.717
		0.897
			
			Ref
			1.303
			5.044
				
				0.712
				0.071

Aortic clamping time
   <60 minutes
   60-120 minutes
   >120 minutes
	
	7.703
	1.478
		
		0.509
		1.276
			
			Ref
			4.108
			4.714
				
				<0.01
				0.224

Ejection fraction group (<55 %)	4.194	0.489	2.722	**<0.05**

From logistic regression analysis for predictors of cardiac recovery pattern, it could be inferred that Age more than 40 years, NYHA 2 or 3, ejection fraction less than 55%, aortic clamping time 60-120 minutes were significantly associated with poor cardiac recovery pattern. Thus these four variables were independent predictors of poor cardiac recovery pattern after aortic declamping. Cardiopulmonary bypass time however could not be inferred significantly as independent predictors of cardiac recovery pattern.

Discussion

The present study is aimed to evaluate the independent predictors of cardiac recovery pattern in 150 patients undergoing cardiac surgery. Both mean duration of cardiopulmonary bypass and mean aortic clamping duration are increased in poor cardiac recovery group, and this difference is also found to be statistically significant (P<0.01). The results of multivariate logistic regression analysis suggest that age more than 40 years, NYHA 2 or 3, ejection fraction less than 55%, aortic declamping time 60-120 minutes are independent predictors of poor cardiac recovery pattern. Compared to cardiopulmonary bypass time, aortic clamping time is observed to be a robust parameter for cardiac recovery pattern.

Many studies have found that the factors with profound impact on cardiac recovery pattern following cardiopulmonary bypass were low ejection fraction, older age, cardiac enlargement, female sex, the length of cardiopulmonary bypass and the duration of aortic cross-clamping.[10,11,12,13] However cardiac enlargement and female sex could not be well associated with poor recovery pattern in present study. Although need of ionotropic agents and the dose of the drug were commonly used to categorize cardiac recovery pattern, such categorization does consider the use of assisted (E.g. pacing, defibrillation) recovery and the duration taken to return to sinus rhythm after aortic declamping.[14,15] Additionally ionotropic agents were given at separation from cardiopulmonary bypass machine and not immediately following aortic declamping.

Another common method of comparison is by noting difficulty in weaning from cardiopulmonary bypass. [16 , 17] Francis Bernard et al concluded sex, diastolic dysfunction and total cardiopulmonary bypass time as independent predictor of difficult weaning from cardiopulmonary bypass. [16] They have observed that the presence of diastolic dysfunction confers a fourfold increase in probability of needing inotropic or vasoactive drugs to separate from CPB. Length of ICU stay has also been used as comparing criteria for identification of predictor in different studies. [18, 19, 20] Low cardiac output syndrome is another such promising factor that can be used as a category to identify predictors. [21,22] Manjula D. Maganti et al have found independent predictors of low cardiac output syndrome as renal failure, earlier year of operation, left ventricular ejection fraction <40%, shock, female gender and increasing age. [22] J. Ward Kennedy et al had compared predictors with operative mortality in Coronary Artery Surgery. [23] Based on various prediction models, scoring system such as European system for cardiac operative risk evaluation (Euroscore), has also been created and widely being used to predict cardiac operative risk. However Parolari et al have found that these scoring systems have overestimation of mortality. [24]

In conclusion we have used a novel strategy to categorize cardiac recovery pattern. Large scale analysis of these factors within each groups of diagnosis is a matter of further interest and will be a part of our further research.

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Pattern of Valvular Involvement and Demographic Features of Patients on Injection Benzathine Penicillin at Dhulikhel Hospital

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Abstract

Background

Rheumatic heart disease (RHD) is the most common cardiovascular disease in children and young adults. Though declined and almost non-existent in developed nations, RHD is still one of the leading cause for premature death and disability in developing countries. Prevalence of RHD is high in both rural as well as urban area of Nepal. Present study is designed to look at the pattern of valvular involvement and demographic features in RHD.

Methods

326 Patients indicated for inj. Benzathine penicillin were selected and echocardiograph performed to see the pattern of vavular involvement. Data analysis was done using SPSS 17.

Result

The most common type of lesion was mixed type with mitral valve involvement. MR was the most common isolated lesion. MS was more commonly seen in females whereas AS was more common in males. Secondary prophylaxis was more common than primary prophylaxis.

Conclusion

RHD still being a major problem and a preventable disease so extensive screening program is required to identify them early and prevent the complication.

Keywords Acute rheumatic fever, RHD, MS, MR, AS, AR, Inj Benzathine Penicillin

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Introduction

Rheumatic heart disease (RHD) is the most common cardiovascular disease in children and young adults.[1] It is estimated to exist with prevalence of 15.6 million cases with 282000 new cases and 233000 deaths each year.[2] Though declined and almost nonexistent in developed nations, still one of the leading cause for premature death and disability in developing countries.[3,4] Prevalence of RHD is high in both rural as well as urban area of Nepal.[5]

It is important to diagnose the pattern and severity of valvular involvement in RHD, so that patients can undergo invasive treatment like PTMC, valve repair or valve replacement at appropriate time. Patients not requiring the invasive treatment can be kept on regular follow up with prophylaxis and possible consequences of disease can be discussed earlier.

Present study is designed to look at the pattern of valvular involvement and demographic features in RHD. This information can be useful for the clinicians as well as the health policy makers.

Methods

All the patients who were indicated for injection Benzathine penicillin at Dhulikhel hospital were included in the study. Study period was from April 1st 2012 to 31st July 2012. There were total 326 patients. 4 months duration was taken so that minimum number patients were missed from the study. In all of the patients demographic features like age, sex, duration of injection, intervention, no of hospital admission was noted down. All the patients underwent echocardiographic study using TOSHIBA Power Vision 6000, performed by either one of the two cardiologists present. Standard guidelines including 2D, M mode, Doppler were followed to identify different valvular lesion.[6,7]

Statiscal analysis is done using SPSS 17. Where ever applicable students t-test and chi-square test were applied.

Results

Age range was from 6 years to 48 years, with mean age being 22 +/- 6.4 years. Out of 326 patients 178 (54.6%) were female and 148(45.4%) were male with p value of 0.01 which was a statistically significant. Average duration of injection Benzathine penicillin was 46+/- 6 months. Total of 31(9.51%) patients had undergone intervention. 22 had PTMC (percutaneous transluminal mitral commissurotomy) and 9 had valve replacement.

During the study period a total of 32 new cases were indicated for Inj. Benzathine Penicillin. Out of which RHD

cases were 28 and ARF (acute rheumatic fever) only 4.In the RHD group 20(71.43%) were female and 8(28.57%) were male. And 8 of the females diagnosed were in their 3rd triemester of pregnancy. Out of 4 ARF cases 2 were male and 2 were female.

During the study period 2 patients had to be treated for infective endocarditis. Three patients were sent for immediate PTMC and two for valve replacement. Table 2 shows that the most common form of isolated lesion involved was MR. 63 (19.33%), followed by MS 38(11.66%), AR 9(2.76%) and AS 5(1.53%). However the table also clearly shows that mixed type of lesion is much more common with involvement of mitral valve.

Table 3 shows that isolated MS was more common among females 22 vs males 14 with p value of 0.01 and AS was more common among males 4 vs females 1 with p value of 0.02. There was no statistical difference among male and female in other pattern of valvular involvement.

Fig.1. Distribution of patients according to sex
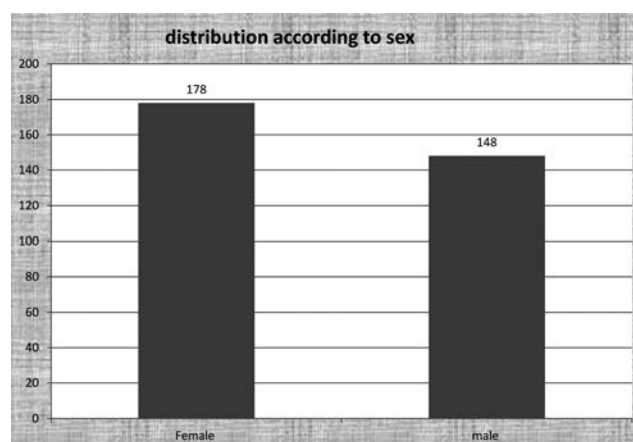
Fig.2.Distibution of Patients according to the intervention procedure
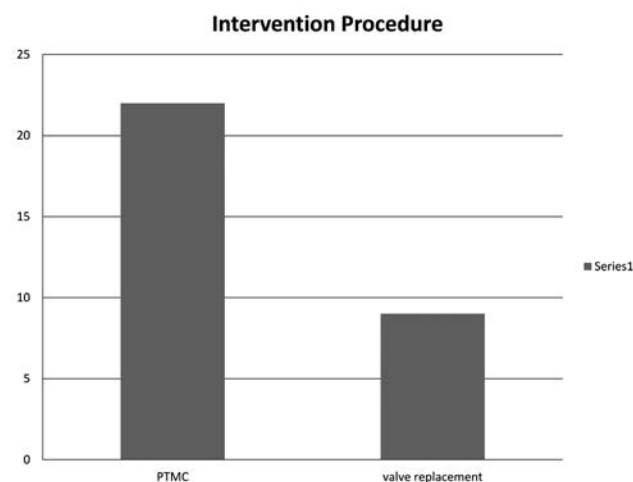
Fig.3. Distribution of patients according to the number of hospital admissions

No of times of hospital admission
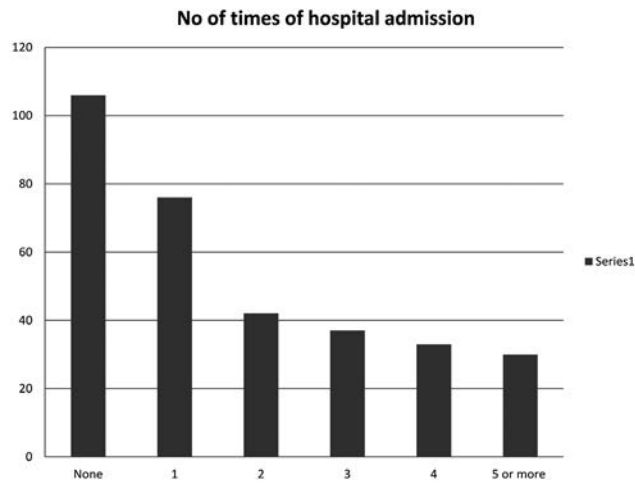
Table.1. Distribution of newly diagnosed cases

Distribution of newly diagnosed cases indicated for injection benzathine penicillin		
	Total number	Percentage %
Rheumatic heart disease	28	87.50
Male	8	28.57
Female	20	71.43
3rd Triemester of pregnancy Acute	8	28.57
rheumatic fever	4	12.5
Male	2	6.25
Female	2	6.25

Table.2. Distribution of patients according to the valvular involvement

Pattern of valvular involvement in echocardiographic finding			
	Pure (%)	Mixed (%)	Total (%)
No Valvular involvement			36(11.04)
Valvular involvement			290(88.95)
MS	38(11.66)	132(41.72)	170(52.14)
MR	63(19.33)	163(50.00)	226(69.33)
AS	5(1.53)	27(8.28)	32(9.82)
AR	9(2.76)	55(16.87)	64(19.63)

Table.3. Distribution of patients according to the valve involvement and sex

Echocardiographic finding	Sex distribution		
	Male	Female	P value
MS	14	22	0.001
MR	29	34	0.1
MS+ MR	74	79	0.08
AS	4	1	0.02
AR	5	4	0.3
MS+MR+AS+AR	11	18	0.02

Discussion

Rheumatic heart disease (RHD) is the most common cardiovascular disease in children and young adults.[1] Though declined and almost nonexistent in developed nations, still one of the leading cause for premature death and disability in developing countries.[3,4] Many papers have been published on this topic from different countries especially from the developing nations.

In our study RHD was more common in females 54.6% than males 45.4% which is similar to Khan RF et.al,[8] Shrestha N et al[9] and Mohammed F et al.[10] But however authors from western countries have reported it be equal in both sexes.[11] Mitral valve was the most often involved valve with mixed MS and MR being the commonest pattern , similar result found by other authors too.[8,9,11-13] In our study the most common isolated lesion was MR 19.33% followed by MS 11.66% , similar to that of Shrestha N et al[9] however Mohammed et al[10] found MS to be commonest type. In our study AS was the least common similar to other studies.[8,9,10,11,12] We found AS to be more common among males however Shrestha N et al found AR to be more common among males .

We found only 2(0.6%) patients with features if infective endocarditis , however Shrestha N et al found 12.4% of patients with infective endocarditis. In our study it was interesting to find that out of 326 patients 88.95% of patients were getting secondary prophylaxis of RHD rather than primary. And the new cases indicated for Inj Benzathine penicillin were majority for RHD 87.5% and not rheumatic fever 12.5%.

Conclusion

RHD is a common cardiovascular problem in our country and still a lot of cases of rheumatic fever remains undiagnosed as a result of which they end up in RHD which could have been prevented. So screening program for rheumatic fever and RHD should be carried out in an extensive way. Hospital based diagnosis and treatment is not sufficient, otherwise we may have to face the burden of RHD in future even more than what we have now. Health policy makers and we physicians should be aware of this

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Efficacy of Enhanced External Counterpulsation (EECP) in Nepalese chronic stable Angina patient: a single centre prospective study at Shahid Gangalal National Heart Center (SGNHC).

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Abstract

Background

Enhanced External Counterpulsation (EECP) is a novel; FDA approved; non-invasive; outpatient treatment offered to patients with refractory angina pectoris. It uses sequentially inflated pneumatic cuffs on the lower extremities to enhance coronary diastolic flow. We studied its effect in twenty one patients with refractory angina pectoris.

Methods

All patients (n=21) who were referred for Enhanced External Counterpulsation to Shahid Gangalal National Heart Center Enhanced External Counterpulsation Llb who completed a treatment course (one hour per day for 35 days) of EECP and underwent 6-minute walk test before and after treatment were included. Demographic data, coronary artery disease risk factors and baseline angiographic data were collected. Distance covered in six minute walk test before and after the treatment was compared.

Results

All the patients who had undergone Enhanced External Counterpulsation had a positive clinical response. Distance covered in six minute walk test improved in all patients after the treatment. Decrease in anginal severity, frequency and the use of sublingual nitrates, with improvement in quality of life was observed after the treatment. During the treatment some patients complained of leg pain, one patient developed blister and one ecchymosis but the treatment was not discontinued.

Conclusion

The results from this study suggest that Enhanced External Counterpulsation is an effective, safe and well tolerated treatment option for the patients with refractory angina pectoris.

Keywords Enhanced External Counterpulsation, Refractory angina pectoris

Introduction

Refractory angina pectoris (RAP) is a clinical diagnosis which is characterized by chronic angina in patients who are refractory to conventional treatment.[1] Treatment of chronic stable angina consists of pharmacological interventions and invasive actions such as percutaneous coronary interventions (PCI) and coronary bypass grafting (CABG). Despite of these generally successful means of treatment the number of patients with severe symptomatic ischemic chest pain has increased.[2] Some patients cannot undergo PCI and CABG due to diffuse coronary artery stenosis. It has been reported that up to 15% of patients with angina pectoris meet the criteria for refractory angina.[3] To cope of with this significant clinical problem, a lot of alternative therapies evolved. Among them, EECP therapy is the most promising treatments for relieving angina and has been shown to improve exercise tolerance in patients with symptoms of stable angina pectoris.[4] EECP is a non-invasive, pneumatic technique that can be offered to patients with angina refractory to anti-anginal medications, who are not suitable candidates for conventional revascularization procedures.[5]
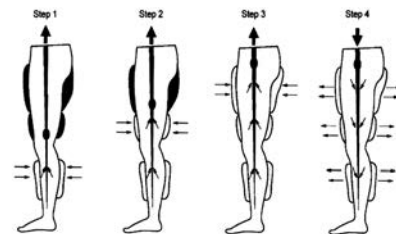
In EECP, three sets of pneumatic cuffs are wrapped around the lower extremities. The cuffs are inflated sequentially at the onset of diastole, producing aortic counter pulsation, diastolic augmentation, and increased venous return. At the onset of systole, the external pressure in the cuffs is released, producing a decrease in systolic pressure. This rapid inflation and deflation raises diastolic aortic pressure, increases coronary perfusion pressure, provides afterload reduction, and enhances venous return with a subsequent increase in cardiac output.[4] The hemodynamic effects are similar to intra-aortic balloon pumping (IABP).[6,7] A treatment procedure involves one to two hours/day for a total of 35 hours of therapy. Several studies around the world have shown patient improvement with lowering in Canadian Cardiovascular Society Classification (CCS) angina class.[8,9] In addition to relieving myocardial ischemia, EECP is associated with improved quality of life.[9,10]

The aim of the present study was to evaluate the efficacy of EECP treatment in Nepalese chronic stable angina patients. The study was designed to examine the immediate effects on chronic stable angina patients who are considered unsuitable for revascularization and are refractory to optimal medical management.

Methods

Enhanced external counter pulsation equipment is supplied by the manufacturer; Vamed Company (Guangzhou, China).The equipment consists of an air compressor, a console, a treatment table and two sets of three cuffs. Before a treatment session, cuffs are wrapped around the patient's legs, one set on each leg. Using compressed air, pressure (260–350mmHg of external pressure) was applied via the cuffs to the patient's lower extremities in a sequence synchronized with the cardiac cycle. In early diastole, pressure was applied sequentially from the lower legs to the lower and upper thighs to propel blood back to the heart. This resulted in an increase of arterial blood pressure and retrograde aortic blood flow during diastole (diastolic augmentation).At end-diastole, air was released instantaneously from all the cuffs to remove the externally applied pressure, allowing the compressed vessels to reconfirm, thereby reducing vascular impedance. Blood pressure changes were monitored by finger plethysmography. Daily one hour treatment sessions were administered for a total treatment course of 35 hours.

Figure 1 Technique of EECP

Three pairs of pneumatic cuffs are applied to the calves, lower thighs, and upper thighs. The cuffs are inflated sequentially during diastole, distal to proximal. The compression of the lower-extremity vascular bed increases diastolic pressure and flow and increases venous return. The pressure is then released at the onset of systole. Inflation and deflation are timed according to the R-wave on the patient's cardiac monitor. The pressures applied and the inflation–deflation timing can be altered by using the pressure waveforms and electrocardiogram on the enhanced external counterpulsation (EECP) therapy monitor.

Study population and protocol

All twenty one (n=21) consecutive patients who underwent 35 hours of EECP and a six minute walk test before and after the treatment in Shahid Gangalal National heart Centre from 2010 were enrolled in the study. The protocol was approved by the Ethics Committee of the Shahid Gangalal National heart Centre. Informed consent was taken from patient and patient party. Patients' data, which had been recorded prior to treatment, included age, gender, past history of diabetes mellitus (DM), hypertension, dyslipidaemia, cigarette smoking and previous angiographic data (angiographic score as Single (SVD)-, two(DVD)-or three(TVD)-vessel disease).All the contraindication to EECP therapy were ruled out in each patient. All patients underwent six minute walk test before and after the completion of the 35 hours of EECP. Patients were also followed with the questionnaires about their anginal symptoms after the completion of treatment.

Six minute walk test

A six minute walk test was performed under the same circumstances for all the patients at baseline and at the end of the treatment by an independent observer. The distance covered in six minute was recorded and compared.

Statistical analysis

The two-tailed paired *t*-test was used to evaluate the significance of improvement in the distance covered in six minute walk test before and after the treatment.

Results

Twenty one patients completed 35 hours of treatment within seven weeks. Table-1 shows the demographic and clinical characteristics. The mean age was 67.1±10.4 years. Of them 11 were male and 10 female,15 with CAD Triple vessel disease, six with CAD double vessel disease, four patient undergone CABG and one underwent PCI stenting to two vessels. Nineteen were hypertensive, nine were diabetics, eight were smoker before. Low LVEF defined as LVEF less than 40% was present in one patient. EECP was chosen as treatment due to angina refractory to medical management and patient not suitable for CABG and PCI.

Table 1: Baseline Demographic and Clinical characteristics: N= 21 (%)

Mean Age	67.1±10.4 years	
Male /Female	11/10	(52/48)
Medical history		
Hypertension	19	(90)
Diabetes	9	(42)
Ex-smoker	8	(38)
Dyslipidemia	All patient taking statin	
CAD TVD	15	(72)
CAD DVD	6	(28)
Post CABG	4	(19)
Post PCI	1	(4.7)
Post CABG+Post PCI	1	(4.7)
Low LVEF (LVEF<40%)	1	(4.7)

During six minute walk test there was improvement in the distance covered (table 2).

Table 2: Comparison of 6 min walk test distance before and after EECP.

	Pre EECP Feet±SD	Post EECP Feet ±SD	P value
6 min walk test distance	835.4±389.9	1103.5±371.9	<0.001

Table 3: Comparison of 6 min walk test distance before and after EECP in each patient
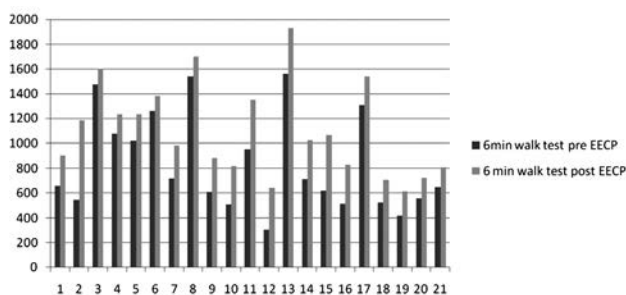
Based on the questionnaires about their anginal symptoms all the patient had decreased in severity of angina, decreased in the frequency of angina, decreased in sublingual nitrates use.

Discussion

The present study is the continuation of our previous study published as an abstract on Nepalese Heart Journal 2011 on efficacy of EECP in Nepal for chronic stable angina pectoris patient refractory to conventional therapy. The majority of the patients showed a profile of extensive coronary artery disease and poor quality of life. These patients' coronary arteries were not suitable for revascularization and were on optimal pharmacological treatment. The medical regimen was not changed during the EECP treatment.

The results from the present study confirm that EECP treatment significantly increases the distance covered in six minute walk test in chronic stable angina pectoris patient, which is in accordance with international studies.[11,12] It was noted that there was a significant decrease in the frequency of angina episodes and nitroglycerin usage based on patient history.

The MUST-EECP (Multicentre Study of Enhanced External Counter Pulsation), the first and only multicentre, prospective, randomized, and blinded, placebo controlled trial on the subject, assessed the efficacy of EECP. In this trial, patients undergoing active counter-pulsation had a significant decrease in angina episodes, but there was no significant improvement in the duration of the exercise test.[4] But relief in myocardial ischemia as well as improved quality of life has been shown in a number of studies from different countries.[13]

In one study, Lawson *et al.* studied 50 patients with chronic stable angina and compared the extent of coronary disease with results of radionuclide stress testing after EECP. This study showed significant improvement in the perfusion defects after EECP and the less the coronary disease involvement, the greater the therapeutic benefit from EECP.[14]

In a report of data from an EECP consortium which included 2,284 patients, an improvement was reported in up to 74% of patients with angina undergoing EECP, by one or more CCS functional classes. The younger patients had a greater likelihood of improvement.[11]

EECP increases diastolic aortic pressure, reduces systolic pressure and enhances venous return, thus resulting in increased cardiac output .[15] However, the mechanisms by which these hemodynamic effects lead to a reduction of angina are poorly understood, although the effect is similar to IABP.[7] There is accumulating evidence suggesting that

EECP treatment improves endothelial function, which may contribute to the clinical benefit .[8] EECP treatment is associated with an immediate increase in blood flow in multiple vascular beds including the coronary arterial circulation.[7] This increase in blood flow may result in increased endothelial shear stress,[16] which enhances endothelial function by stimulating the release of the vasodilatory mediator nitric oxide and reduces the release of the vasocontractile endothelin-1.[15,17-19] However, most of the experience is from small animal or human uncontrolled studies, and the mechanism of the sustained antianginal benefit with EECP remains unclear.

Long term effects of EECP treatment are thought to be mediated through shear stress on the vascular endothelium, which in turn triggers angiogenesis and improves vascular endothelial function[20] due to modulated release of vasoactive substances such as endothelin,[21] nitric oxide[21] and vascular endothelial growth factor.[22]

Furthermore, besides the release of metabolites from ischemic regions, an increase in endothelial shear stress is considered a major stimulus for collateral blood vessel development and recruitment.[22] Increase in collateral perfusion is by opening preformed collateral channels, either directly via increasing diastolic blood pressure and flow or indirectly via release of vasodilator mediators.[8]

EECP therapy has been associated with the release of angiogenic factors, such as vascular endothelial growth factor,[22] basic fibroblast growth factor and hepatocyte growth factor.[21] In recent studies by Tao et al,[20,23]

EECP therapy demonstrated stabilization of coronary endothelium, an effect very similar to that of athletic training. Lawson *et al* reported that EECP seemed to exert a training effect, decreasing peripheral vascular resistance and the heart rate response to exercise.[24]

Figure2: Mechanism of Action of EECP clinical benefit.
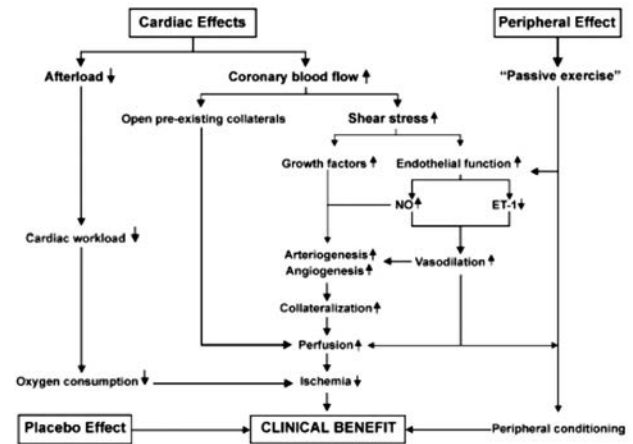
Conclusion:

The present study confirms EECP as a safe and practical treatment for angina in general clinical practice. Its more widespread availability as a treatment alternative may prove beneficial to patient care. One limitation of our study was that the placebo effect of the device could not be ruled out

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Study of the Side effects profile of different antihypertensive drugs among the Hypertensive patient

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Abstract

Background

Hypertension is the leading cause of morbidity and mortality worldwide. Because hypertension is usually asymptomatic yet requires long term therapy, consideration of potential of undesirable effects of drugs used for its treatment is important for making the appropriate choice. In this context, a precise understanding typical adverse reaction profile of the different drugs is essential.

Objective

This study was done to assess the side effects profile of different antihypertensive drugs (calcium channel blocker, beta blocker, ACE inhibitor) among the hypertensive patient.

Methods

A mixed retrospective & prospective cross sectional study of 61 patients was done at Medical Out Patient Department of Dhulikhel Hospital KUTH were included in the study.

Result

Dry cough was experienced by most of the patients (66.7%) and both dry cough and dizziness was reported by only one patient (6.7%) taking enalapril. In case of atenolol, bradycardia, dizziness and insomnia were experienced by same number of patients (14.3%) separately. Among amlodipine users, side effects experienced were peripheral edema (23%), flushing (2.6%), dyspnoea (2.6%), headache (5.1%), dizziness (2.6%), palpitation (2.6%) and insomnia (2.6%).Patients on enalapril had significantly more complaints regarding side effects (73.3%) compared to those taking amlodipine (41%) (OR=4, p=0.033) and atenolol (42.9%).There was no significant difference in the occurrence of side effects between enalapril- atenolol (p >0.05) and amlodipine- atenolol (p >0.05).

Conclusion

Although all three drugs were well tolerated, more side effects were seen in case of enalapril. Enalapril has 4 times higher rate of side effects than amlodipine.

Key word Antihypertensive drugs, Side effects, Enalapril, amlodipine.

Introduction

Hypertension is the leading cause of morbidity and mortality worldwide. It is a potent risk factor for second major cardiovascular events, but the most for cerebrovascular accidents particularly in the elderly.[1] The World Health Organization (WHO) report which examined the major risk factors for global disease identified hypertension as one of the most important causes of the disease burden of developed and developing nations.[2]

Because hypertension is usually asymptomatic yet requires long-term therapy, consideration of potential undesirable effects of drugs used for its treatment is important for making the appropriate choice. In this context, a precise understanding of the efficacy and typical adverse reaction profiles of the different drugs is essential. Even with a good knowledge of all of these aspects, however, no fixed plan for drug treatment of hypertension suitable for every patient can be established. A good control of blood pressure and avoidance of adverse drug reactions can, however, be achieved by appropriate drug selection and dosage, carried out after careful consideration of the known adverse reaction profiles as well as the known spectrum of pharmacological actions of the different compounds in reducing blood pressure.

The side effects of different antihypertensive medication are also not well studied in Nepalese population despite of clearly mentioned in textbook and literature. The result on side effect profile would provide the necessary information on side effect of different antihypertensive medications as well as some information on reasons of poor compliance of antihypertensive medication.

Methods

This study was approved by Institutional Review Committee, Kathmandu University School of Medical Sciences. A total of sixty one patients who had been taking antihypertensive as monotherapy or newly diagnosed hypertensive patients who were prescribed antihypertensive were included in this study. This study was done by reviewing all available documents and interviewing the patient during regular hospital visits. The study included data available several years ago to till latest available data during study period. Those newly diagnosed patients were followed up as possible. Clinical information and details regarding side effects were collected from those patients at medical outpatient department of Dhulikhel Hospital, KUTH from 3rd December, 2006 to 29th April, 2007. Patient taking other than antihypertensive medication, patient having other comorbid condition like IHD, heart failure, COPD, diabetic mellitus, peripheral vascular disease, cardiomyopathy &

others were not included in the study.

Preliminary questionnaire was prepared and filed tested for 1 week then it was modified as per requirement accordingly. Data from interview were collected by using questionnaire. Past treatment & clinical details were obtained from the medical records.

After taking written consent from the patient, the information was obtained. They were asked about side effects which they felt after taking medication. This entire information gathered was entered in prepared questionnaire. All date collected were coded as per variables and entered in SPSS data sheet and analyzed using the statistical software SPSS 13.0 for windows. The significant differences of side effect between drugs were analyzed using χ^2 test. *P*-value of <0.05 was taken as statistically significant.

Results

The details of use of medication are shown in Table 1. Among 61 patients, amlodipine was being used by 39 patients whereas enalapril and atenolol were being used by 15 and 7 patients respectively. Among amlodipine users, nearly fifty percent of patients were of age group of 30-50 yrs. About more than half (56.1%) of patients using amlodipine were female.

In case of enalapril, near about two third (73.3%) were female and one third (26.7%) were male. Enalapril was found to be mostly (46.7%) used by patient of age group of 40-50 yrs.

Among the atenolol users, most (57.1%) of the patients were of age group 40-50yrs. Females (73.3%) were predominantly using atenolol than male (28.6%).

Table 1. Details of Use of Medication in 61 Patients

Characteristics		Amlodipine	Enalapril	Atenolol
Age				
	<20 yrs	1 (2.4)		
	20-30yrs	2 (5.1)	2 (13.3)	
	30-40 yrs	10 (25.5)	1 (6.7)	1 (14.3)
	40-50 yrs	10 (25.5)	7 (46.7)	4 (57.1)
	50-60 yrs	6 (15.3)	1 (6.7)	1 (14.3)
	60-70 yrs	7 (17.7)	2 (13.3)	1 (14.3)
	>70 yrs	3 (7.5)	2 (13.3)	
Total no of patients		39	15	7
Gender				
	Male	17 (43.9)	4 (26.7)	2 (28.6)
	Female	22 (56.1)	11 (73.3)	5 (71.4)

The side–effects of three categories of antihypertensive drugs reported by the patients on mono-therapy are shown in Table 2. Among amlodipine users, 41% of patient reported side effects. Patients on enalapril complained of side effects more frequently (73.3%) than other class of drugs whereas 42.9% of patients on atenolol experienced side effects.

It was found that among 15 patients taking enalapril, 10 (66.7%) patients experienced dry cough and 1 (6.7%) experienced both dry cough and dizziness. In case of atenolol, 1 patient experienced bradycardia, 1 patient experienced dizziness and 1 patient experienced insomnia whereas among 39 patients taking amlodipine ,9 (23%) patient experienced peripheral edema,1 (2.6%)-flushing, 2 (5.1%)- headache,1(2.6%)-dizziness, 1 (2.6%)- palpitation, 1 (2.6%)- dyspnoea, 1 (2.6%)- insomnia.

Table 2. Details of Side -effects

	Amlodipine (n=39)	Enalapril (n=15)	Atenolol (n=7)
Side -effect	16 (41)	11 (73.3)	3 (42.9)
Types of side -effect seen			
Peripheral edema	9 (23)		
Drycough		10 (66.7)	
Bradycardia			1 (14.3)
Flushing	1 (2.6)		
Headache	2 (5.1)		
Dizziness	1 (2.6)		1 (14.3)
Palpitation	1 (2.6)		
Dyspnoea	1 (2.6)		
Insomnia	1 (2.6)		1 (14.3)
Dry Cough with Dizziness		1 (6.6)	
No Side-effects	23 (58.9)	4 (26.7)	4 (57.1)

There was statistically significant difference in the occurrence of side effects between drug amlodipine and enalapril (p= 0.033). The risk of occurring side effect with enalapril was found four times higher than amlodipine. But there was no significant difference in the occurrence of side-effects between drug enalapril – atenolol (p= 0.343) and amlodipine – atenolol (p=1)

Table 3. Details of comparison between two medication

	Side effects	No side effects	p-value	OR
Amlodipine	16(41)	23(59)	0.033	4
Enalapril	11(73)	4(26.7)		

	Side effects	No side effects	p-value
Enalapril	11(73.3)	4(26.7)	0.343
Atenolol	3(42.9)	4(57.1)	

	Side effects	No side effects	p-value
Amlodipine	16(41)	23(59)	1
Enalapril	3(42.9)	4(57.1)	

Discussion

Regarding the use of drugs, amlodipine was the most frequently prescribed drug**.** This might be due to less complication of CCBs, high safety of amlodipine and preferences in case of treatment of hypertension with no previous treatment. British HTN society guidelines recommended use of either [ACEI or BB] or [CCB or diuretics] as the first line antihypertensives. Angiotensin converting enzyme inhibitor and calcium channel blockers are recommended by the JNC VI as alternative to diuretics and β-blocker unless compelling indications for the first line use are present. Despite these recommendations, ACE inhibitors and calcium channel blockers are consistently the most frequently prescribed antihypertensive agents in both younger and older patients with hypertension.[3]

The usefulness of antihypertensive drugs depends not only on the degree to which blood pressure is lowered but also on the side effects profile. Side effects of antihypertensive medication affect tolerability and compliance. So they are becoming more important issue.

In this study, all three drugs were reasonably well tolerated. The side effects experienced most frequently in amlodipine were peripheral edema (23%, n=9), headache (5.1%,n=2), flushing (2.6%,n=1), dizziness (2.6%,n=1), palpitation (2.6%,n=1), dyspnoea (2.6%,n=1), insomnia (2.6%,n=1). Edema occurs with CCBs because of vasodilation in the distal arterioles, thereby leading to increased intravascular capillary pressures and increased venous pressures, at least in the lower extremities and eventually leakage of fluid into the extracellular space.[4] Excessive vasodilatation results in headache, dizziness, flushing etc.

The side effects experienced by enalapril were dry cough (66.7%, n=10) and dry cough with dizziness (6.6%, n=1). The cough is typically irritating, dry and nonproductive and is not dose related. In 5 to 20% of patients, ACE inhibitors induce a bothersome, dry cough. A number of suggestions have been put forward as to the etiology of the cough including potentiation of bradykinin levels by ACE inhibition, an increased sensitivity of the normal cough reflex, and finally increased levels of circulating prostaglandins. However, the cough is definitely due to inhibition of ACE rather than the

blockade of the renin–angiotensin system. The percentage of side effects is more in this study. It may be due to the fact that the patients attending outpatient department are mostly due to problems related with either uncontrolled blood pressure or side effects of drugs.

The side effects experienced with atenolol were bradycardia (14.3%, n=1), palpitation (14.3%, n=1) and insomnia (14.3%, n=1).Atenolol is a cardio selective drug and potent in blocking β_1 –receptors.the blockade of this receptors decreases the heart rate and result bradycardia.[5]

Patients on enalapril had significantly more complaints regarding side effects than other categories of drugs. The risk of occurring side effect with enalapril was 4 times higher than amlodipine. This result is similar to the study of Gryglas P[6] in which more side effects were experienced in enalapril group than that of amlodipine. Similar result was obtained in study conducted by Webster et al., in which amlodipine was found to be safer than atenolol.

There was no significant difference in the occurrence of side effects between enalapril- atenolol and amlodipine -atenolol. The result obtained is similar to the result obtained in some of previous studies in which amlodipine and atenolol were well tolerated.[7] After 4 weeks of therapy the incidence of side effects was slightly, but insignificantly, higher on atenolol than on enalapril.[8] No serious side effects were encountered with enalapril and atenolol.[9] However, when compared with the beta-blockers atenolol and nadolol, amlodipine had a favorable safety profile. In particular, the incidence of severe side effects in patients receiving amlodipine was approximately half than that reported for patients receiving beta-blockers.[10] It should be considered that the finding of the present study has to be interpreted with caution as the sample size was limited.

It should be noted that this is a cross-sectional study and hence, the possibility of missing the patients who discontinued the drug or stopped follow-up due to poor BP control or side -effects cannot be ruled out. Hence, the overall result may not give a realistic picture. A study conducted in the United Kingdom where as many as half of all patients who used antihypertensive drugs have been found to discontinue treatment within follow-up periods ranging from 6 months to 4 years and 42% of all changes in antihypertensive therapy were due to side effects.[11] Those reporting problems with their medications were 3.5 times more likely to reduce their doses or discontinue therapy than patients not reporting problems.

The study being retrospective and mono-centered involving limited sample size, the real influence of various parameters with regards to side effects could have been missed. However, this study definitely provides a perspective of side effects profile of the antihypertensive drugs. The findings of this study will need to be revalidated with larger sample size and longer follow-up times to derive stronger conclusions.

Conclusion

Attention must be paid to side- effects that can cause patient to drop out of treatment and might lead to failure to control hypertension. Calcium channel Blockers, ACE inhibitor and β-blockers are considered to be the most popular drugs class. In the present study, CCBs were best tolerated. The risk of occurring side effects with enalapril was found 4 times higher than Amlodipine. There was no significant difference in the occurrence of side-effects between drug enalapril – atenolol (p= 0.343) and amlodipine – atenolol (p=1).

Peripheral edema due to amlodipine and dry cough due to enalapril were more common side effects experienced by these drugs respectively. Although all three drugs were well tolerated, more side effects were seen in case of enalapril.

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Prevalence of Sydenham's chorea in patients with Acute Rheumatic fever in Nepal.

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Abstract

Background

Sydenham's Chorea (SC) is a major manifestation of acute rheumatic fever (ARF) and is the only evidence of ARF in approximately 20% of cases. There are no published reports on prevalence of SC in patients with ARF in Nepal.

Objectives

This retrospective study was done to find out the prevalence of SC in patients with ARF in Nepal.

Methods

Four years data of 672 patients with ARF from the RF/RHD registry of National RF/RHD prevention & control programme launched by Ministry of Health and Population & Nepal Heart Foundation in 32 hospitals throughout Nepal were analyzed.

Results

Prevalence of SC as a major manifestation of ARF in Nepalese patients was found to be 3.87%. Females were mostly affected with a female-to-male ratio of 3:1. Patients of age group 10-15 years were affected the most. SC was the third most common manifestation of ARF after Arthritis and Carditis.

Keywords Acute Rheumatic Fever, RF/RHD prevention and control programme, Sydenham's chorea,

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Introduction:

Sydenham's chorea (SC) or chorea minor (historically referred to as Saint Vitas' Dances)[1] is a disease characterized by rapid, uncoordinated jerking movements affecting primarily the face, and hands. Sydenham's chorea results from childhood infection with group A Beta hemolytic Streptococci[2] and is reported to occur in 5 - 36 % of patients with Acute Rheumatic Fever (ARF).[3] The disease is usually latent, occurring up to 6 months after the acute infection, but might occasionally be the presenting symptom of rheumatic fever. SC is one of the major manifestations of ARF described in Jones criteria for diagnosis of ARF. SC is more common in females than in males and most patients are children below 18 years of age. Adult onset of SC is comparatively rare and most of the adult cases are associated with exacerbation of chorea following childhood SC. It is named after British Physician Themas Sydenham (1624 – 1689).[4] There are no published studies on prevalence of SC in patients with ARF in Nepal.

There are several published studies on prevalence of RF / RHD in Nepal. Prevalence of RF / RHD has been reported to be 1.0 to 1.2 per 1000 school aged children in Nepal.[5-7] None of these studies have data on manifestations of ARF. There are very few published studies on manifestations of ARF in international medical literature. We have tried to collect data on RF / RHD with SC as manifestation of ARF.

Ministry of health and population (MoHP) is running National RF/RHD prevention & control programme throughout the country with technical support from Nepal Heart Foundation (NHF). Registry of RF/RHD is maintained in 32 participating hospitals throughout the country from east to far west. The registry includes details of the RF/RHD patients receiving secondary prophylaxis. A central Registry of RF / RHD patients is also maintained at the NHF central office located in Kathmandu.[8] The purpose of this study was to find out the prevalence of SC in Patients with Acute RF in Nepal.

Methods:

Four years data (June 2007 – Oct 2011) from the registers of National RF / RHD Prevention and control programme from 32 hospitals of Nepal were collected and analyzed in this retrospective study. There were 6028 RF / RHD patients registered for secondary prevention. Out of them 672 had ARF. Only this group of patient was enrolled in our study. These patients were suffering from ARF and were receiving 3 weekly Benzathine Penicillin injections or oral antibiotic for secondary prevention of RF. Details of these patients were noted in a previously designed format. Details of age, sex and manifestations were collected and analyzed for the prevalence of SC.

Results

There were 672 patients with ARF in this study. Among them 374 (55.64%) were females and 298(44.34%) were males. 168(25%) were under 10 years of age, 402(59.8%) from 10-16 years and 102(15.2%) were above 16 years. Out of 672 a total of 26(3.87%) patients had chorea. Among them 20(76.92%) were females and 6(23.08%) were males. 7(26.9%) were below 10 years, 19(73.1%) 10 to 16 years and none were above 16 years age.(**Table 1).** In 16(2.31%) patients chorea was associated with Carditis, and in 6(0.89%) chorea was associated with Arthritis. Only 4(0.67%) patients had chorea as the only manifestation of ARF. The prevalence of SC was found to be 3.87% among patients with ARF.**(Table 2)**

Table 1 Age and sex of ARF patients with Sydenham's chorea

Age group		Sex	
<10yrs	7(26.9%)	Female	20(76.92%)
10-16 yrs	19(73.1%)	Male	6(23.08%)
>16yrs	0		
Total	26	Total	26

Table 2 Chorea as a major manifestations of ARF

Major manifestations	No. of patients
Chorea + carditis	16(2.31%)
Chorea + arthritis	6(0.89%)
Chorea alone	4(0.67%)
Total	26(3.87%)

Discussion

A major manifestation of AFR, SC is the result of an autoimmune response that occurs following infection by group A β-hemolytic streptococci that destroys cells in the corpus striatum of the basal ganglia.[9-11]. The prevalence of ARF and Sydenham's chorea has declined progressively in developed countries over the last decades.[12,13]

According to some published reports chorea is a major manifestation of ARF and is the only evidence of RF in approximately 20% of cases. In some outbreaks, chorea had been present in more than 30% of patients with ARF. The female- to -male ratio is approximately 2:1 and most patients present between 5-15 years of age. Studies have demonstrated a high frequency of a positive family history in the patients with SC and ARF. Arun at al found that 3.5% of patients and 2% of siblings of children with SC had been affected.[14] SC usually develops in those aged 5-15 yrs. The patient may have no history of ARF and a preceding streptococcal infection cannot always be documented. Infections can be subclinical and often precede the development of neurologic symptoms by age 1-6 months. At least 25% of patients with SC fail to have serologic

evidence of prior infection. Chorea alone is sufficient for diagnosis of ARF provided other causes of the condition have been excluded.[15]

Our study has reported the prevalence of SC among patients with ARF to be 3.87% which is much lower than 5-38% reported by WHO.[3] The reason behind the variation might be related to differences in susceptibility to chorea in the host population or to differences in case finding methods. It is unknown whether particular strains of group A streptococci vary in their propensity to elicit chorea. Why the prevalence of SC among ARF patients in Nepal is lower than in other countries is a subject for further studies. In our study female-to-male ratio was 3:1 which is slightly different than 2:1 reported in international literature.[3] Patients of age group 10-16 yrs were mostly affected. This is similar to the reports of other published studies.

Conclusion

Prevalence of SC as the major manifestation in patients with ARF in Nepal is low and is reported to be 3.87% in our study. Females of age group 10-15 yrs are mostly affected with female-to male ratio 3:1. SC is the third common manifestation of ARF after arthritis and carditis. Chorea as the only manifestation of ARF is not uncommon but is mostly associated with carditis and arthritis in Nepalese population.

Acknowledgement

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Hypertension among Young Adults in the Shopping Malls of Kathmandu

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Abstract

Background

Hypertension is a major public health challenge in the world. Developing countries share the major burden of it. Unlike thought before, hypertension is increasing among poor, young and women.

Methods

It was a cross sectional study carried out in The Hypertension Screening and Awareness Program conducted in the shopping malls at the heart of Kathmandu on the occasion of World Hypertension Day 2012 by Shahid Gangalal National Heart Center, Kathmandu.

The blood pressure was measured according to World Heart Organization's guideline by registered nurses. There were total 486 participants with the mean age of 29.51±10.77years. Majority of the participants were male (67.1%). Most of the participants were less or equal to 40 years (84.6%). Mean systolic blood pressure was 112.3±14.69mmHg and mean diastolic blood pressure was 75.09±11.89 mmHg. Average mean blood pressure was 87.41±12.28mmHg in the study population.

Results

Despite majority of participants were at young age, prevalence of hypertension was 23.7%, pre-hypertension was 30% and 46.3% had ideal blood pressure according to JNC-7 Classification. Prevalence of hypertension was higher among male (30.39% vs. 10%). Almost two third of the hypertensive subjects were less or equal to 40 years (64.35%). Awareness, treatment and control of hypertension were 39.13%, 18.26% and 7.38% respectively.

Conclusion

In conclusion, Hypertension is an emerging public health challenge in urban areas of Nepal. Most importantly, it may be increasing among young population. Moreover, awareness, treatment and control rates are not satisfactory.

Key Words Hypertension, Prevalence, Awareness, Treatment, Control, Shopping Malls, Screening

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Introduction

There are at least 970 million people worldwide with elevated blood pressure. About 330 million people have hypertension in developed world and 640 million people have hypertension in developing world. World Health Organization (WHO) rates hypertension as one of the most important causes of premature death worldwide and the problem is growing.[1]

Hypertension is one of the major cardiovascular problems in Urban and suburban areas of Nepal. Unlike thought before, it is increasing among young population and in all social strata. Approximately one in five adults in urban areas of Nepal has hypertension. Majority of them are unaware and untreated. The prevalence of hypertension was 19.7% among the adults (18 years and more) in sub-urban areas of Nepal. Likewise, Awareness, treatment and control rates are very low.[2]

The key objective of the study was to identify the prevalence, awareness, treatment and control of hypertension among young population in Kathmandu.

Methods

It was a cross sectional study , descriptively analyzed on the basis of primary data collected on the one day screening programs conducted by Shahid Gangalal National Heart Center, Bansbari, Kathmandu in the shopping malls. The screening programs were conducted in two different malls, namely The City Center and The Civil Mall .They are grand shopping malls situated at the heart of Kathmandu. A screening team from Shahid Gangalal National Heart Center screened 261 people in the City Center and 225 participants in the Civil Mall.

Firstly, participants were explained about the program, registered and verbal concern was obtained. Then each participant was kept for rest at least five minutes in sitting position in the chair. The back was supported, both arms were at rest on chair and both feet were comfortably rested upon the floor. Blood pressure of each participant was measured by registered nurse by pretested sphygmomanometer and stethoscope. Blood pressures were measured to both arms and highest one was recorded. For those participants who identified as hypertensive, were reconfirmed.

Moreover, after measuring blood pressure, each participant was counseled accordingly. A team discussed on healthy diet, regular exercise, healthy lifestyle and importance of regular medicine in management of hypertension. Two thousand copies of an awareness pamphlet were also distributed to all the participants and visitors in the malls.

Blood pressure was further classified according to JNC-7 Classification of hypertension. Awareness of hypertension was defined as an awareness of the hypertensive participants about being hypertensive before examination of blood pressure. Treatment rate is defined as the rate of treatment among hypertensive participants. And, control rate is defined as the rate of hypertensive participants who maintained target blood pressure (ie < 140/90 mmHg).

Finally, data are analyzed in SPSS16.0.

Results

Brief Description of the participants

In those two screening and awareness programs, 485 individuals were screened. Among the participants 346(67.1%) were male and 160(32.9%) female. They were staffs of malls, visitors, clients and others. Most of them were resides of Kathmandu and its periphery.

Age distribution of the participants

Majority of the participants of this study were young with the highest participation from age group 21-25 yrs (27.08%) followed by 15-20 years (20.6%), 26-30 yrs (17.9%), 31-35 yrs (11.3%) and so on. Mean age of the participants was 29.51 ± SD 10.77 years.
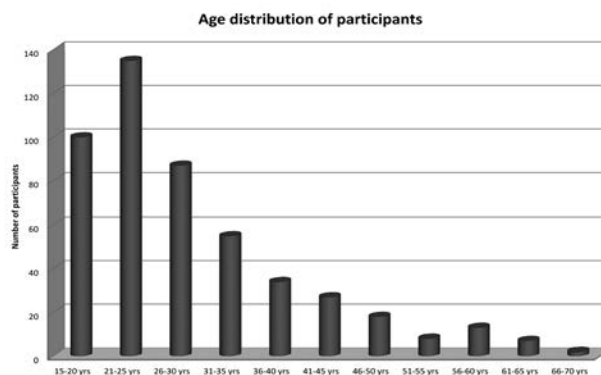
JNC-7 Classification of the findings of blood pressure

According to JNC-7 classification findings of blood pressure is described as below.
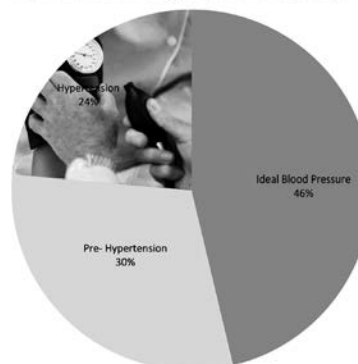
In this study, findings of blood pressure were classified according to JNC-7 classification. Ideal blood pressure was found among 225 (46.3%) participants, Pre- Hypertension among 146 (30%) participants and 115 participants were found to be hypertensive. So, the prevalence of hypertension was 23.7%. Mean Systolic Blood Pressure was 112.03± SD14.69mmHg and Mean Diastolic Blood Pressure was 75.09±SD11.89 mmHg. Average mean blood pressure of the population was 87.41± SD 12.28 mmHg.

Age Group	Ideal Blood Pressure		Pre-Hypertension		Hypertension		Total Participants
	Frequency	Percent	Frequency	Percent	Frequency	Percent	
15-20 yrs	56	56%	38	38%	6	6%	100
21-25 yrs	90	66.67%	32	23.70%	13	9.63%	135
26-30 yrs	38	43.67%	27	31.03%	22	25.29%	87
31-35 yrs	17	30.91%	15	27.27%	23	41.81%	55
36-40 yrs	11	32.35%	13	38.24%	10	29.41%	34
41-45 yrs	3	11.11%	7	25.93%	17	62.96%	27
46-50 yrs	4	22.22%	7	38.89%	7	38.89%	18
51-55 yrs	1	12.5%	2	25%	5	62.5%	8
56-60 yrs	4	30.77%	3	23.08%	6	46.15%	13
61-65 yrs	1	14.29%	1	14.28%	5	71.43%	7
66-70 yrs	0	---------	1	50%	1	50%	2
Total	225		146		115		486

Age specific classification of hypertension

The age specific prevalence of hypertension was lowest among 15-20 years age group and the highest among 61-65yrs age group. Highest prevalence of pre- hypertension was found in the age group 40-65 years, 36-40 years and equally in 15-20 years (38%).

Sex and Hypertension

Sex	Total Number	Hypertensive Subjects	Prevalence
Male	326	99	30.39%
Female	160	16	10%
Total	486	115	23.7%

The prevalence of hypertension was three times higher among men (30.39%) in compare to women (10%).

Prevalence, awareness, treatment and control of hypertension (PATC)
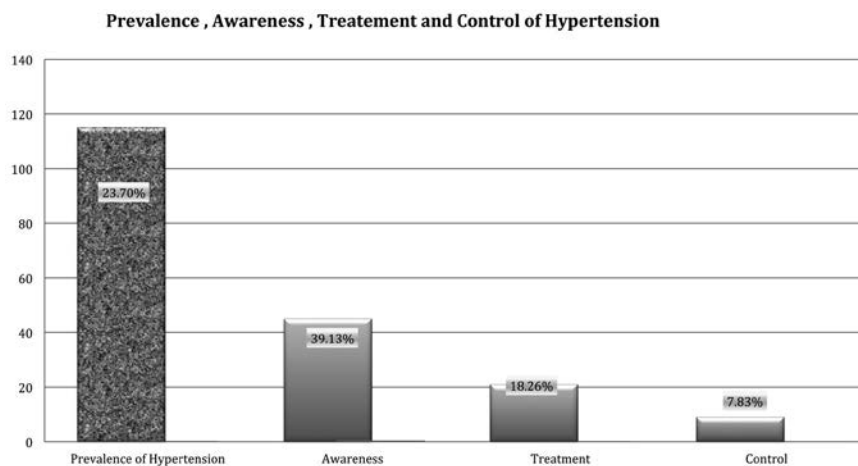
The prevalence of hypertension was 23.70%. Among those 115 participants with hypertension, 39.13% were aware of the condition however only 18.26 % of them were on treatment and only 7.83% had control over hypertension.

In summary, prevalence, awareness, treatment and control rates were 23.70%, 39.13%, 18.26% and 7.83% respectively.

Discussion

Hypertension is a major global health problem and it is also a growing health problem for urban and sub-urban areas of Nepal. The prevalence of hypertension was 19.6% in sub urban areas of Nepal.[1] It was 35.5% in Beijing, China.[3] Almost 1 in 5 young adults have hypertension in the U.S.[4] In our study, prevalence of hypertension was 23.7%. It is of course higher than previous study of Nepal, despite the variation of the age of the participants in these two studies. In previous study, mean age of participants was 37.8 ± 16.3 years while in our study it was 29.51 ± 10.77 years. Our prevalence was lesser than the prevalence in China. While comparing with recent Add Health Study in U.S., prevalence of this study was greater than previous study. It may be because of relatively smaller sample in this study.

In general, awareness, treatment and control rates are poor in Nepal. The awareness, treatment and control rates are 41.1%, 26% and 6% in Nepal.[2] Likewise it was 42.5%, 35.9% and 11.8% respectively in China.[3] In our study, awareness rate was 39.13%, treatment rate was 18.26% and control rate was 7.83%.The rates of awareness and treatment were lesser than previous studies while control rate was improved in compare to previous study of Nepal. Yet, it was lesser in compare to China.

We found, prevalence of hypertension was three times higher among men in compare to women. Prevalence of hypertension among 15-20 yrs age group was 6%. Most importantly 38 % of them had pre-hypertension. More than two third of the hypertensive subjects in this study were less or equal to 40 years (64.35%).

Hypertension is widely believed as an "old age" problem but the respective findings of this study highlight the fact that it may also be a "young age" problem as well.

The limitations to the study were relatively small sample size, it not a fully randomized sample and the sample was not taken from randomized population.

Conclusion

Though majority of participants were young, almost one out of four of them had hypertension and one in three of them were at risk of developing it. Hypertension is increasing even among young urban population of Nepal. Prevention, control and management of hypertension have immense importance in current scenario. Screening and awareness program like this could be a milestone for controlling cardiovascular disease as a whole in resource limited countries like Nepal.

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Knowledge Regarding Modifiable Risk Factors of Coronary Atherosclerosis Heart Diseases in Kathmandu Municipality

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Abstract

Background

Progressive urbanization and adoption of the "western" lifestyle contributes to the rising burden of cardiovascular disease in the developing world Coronary Atherosclerotic Heart Disease is no longer confined by geographical area or socioeconomic boundary. The prevalence of Coronary Atherosclerotic Heart Disease is increasing in Nepal. Knowledge is an important pre-requisite for implementing both primary and secondary preventive strategies for cardiovascular diseases. This investigation attempts to quantify knowledge of modifiable risk factors of Coronary Atherosclerotic Heart Disease among sample population in Kathmandu metropolitan city.

Methods

Community based cross-sectional descriptive study design using quantitative method of study was conducted in ward no 5 of Kathmandu out of 35 wards. Selection was done by simple random technique (lottery method). Total house hold serial number of selected ward was identified from election commission record section and data was collected using systemic random sampling. The household head aged 18 years and above was taken as representative sample (n= 196). Standard questionnaire was used to interview participants. The risk factors specifically included smoking, hypertension, elevated cholesterol levels, diabetes mellitus and obesity.

Results

The mean age (SD) of the 196 participants was 51.26 (13.56) years. Of the participants only 22% had good level of knowledge regarding modifiable risk factors of Coronary Atherosclerotic Heart Disease. This study showed that majority of the respondent lack predefined good level of knowledge regarding modifiable risk factors of Coronary Atherosclerotic Heart Disease. 85.2%, 61.73%, 40.31%, 28.6%, 17.86% correctly identified hypertension, obesity, cholesterol, smoking and diabetes mellitus respectively as modifiable risk factor of Coronary Atherosclerotic Heart Disease. Stud y found association of good level of knowledge in male participants (p=0.006), Brahmin cast (p=0.001), living in nuclear family (p= 0.041), ex-smoker (p=0.06), doing regular exercise (p= 0.006).

Conclusion

This study call for efforts such as targeted public health education to increase the level of knowledge about the modifiable risk factors of heart disease.

Key words Knowledge, coronary atherosclerosis heart diseases, cross-sectional study, Nepal

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Introduction

CASHD is the leading cause of death in the world. It accounts for nearly 30% of death globally; even in low income and lower middle income countries CASHD results in 27% of total death. Further tuberculosis, malaria and AIDS result in only 10% of death globally.[1]

The WHO has drawn attention to the fact that CASHD modern epidemic of developing countries. Myocardial infarction is a leading cause of death in industrial nations. Even in a developing country like Nepal, it is emerging as a major public health problem. Although CASHD declined in developed countries from 1980 to 2000, the World Health Organization predicts that CASHD will become the *major* cause of death in almost all countries by 2020, with over 10 million deaths per year predicted. Progressive urbanization and adoption of a "western" lifestyle contributed to the rising burden of cardiovascular disease in the developing countries.[2,3]

Developing countries are repeating the earlier lifestyle mistakes of developed countries. Economists predict that rising CASHD costs will greatly sap these countries' resources, delay economic growth, and cause unnecessary suffering.[4] South Asia comprises 25% of the global population yet contributes nearly 60% of the global cardiovascular disease burden. Smoking, hypertension, and diabetes are strongly associated with CASHD among south Asian.[5,6]

Prevention of CASHD is the most effective way of combating the CASHD epidemic in the resource poor nations. Knowledge of the predisposing risk factors is important. One method of targeting preventive educational strategies involves measuring and appropriately disseminating knowledge of the modifiable risk factors. Earlier studies have revealed that education programs for the elderly were effective in improving health promotion knowledge and behaviors.[7,8] Although knowledge alone is insufficient, it is assumed to be a key component of behavioral change decision making,[9] and provides cues for action.[10] Estimating the level of knowledge of the population at large as well as those suffering from CVD can help to guide public health programs especially those directed towards reducing modifiable risk factors for CASHD.

The level of knowledge of risk factors for CASHD varies among different populations. In investigations in the western world, such as in Canada[11] shows that individuals at greater risk of cardiovascular disease are elderly and those with low education levels and are least able to recall risk factors associated with CASHD.

Similarly, in the UK, South Asian families were less likely to take regular exercise, and had a lower awareness of cholesterol or dietary content (fiber, sugar, salt) compared to the native white population.[12,13] A similar study in Saudi Arabia shows that physically inactive people were least aware of their risk of CASHD.[14] A lack of cardiovascular health knowledge in the general population in Pakistan that reports limited knowledge of modifiable risk factors of heart disease in patients who had experienced an acute myocardial infarction.[15,16] This Pakistani study isolated specific demographic factors that correlate with lower knowledge of CASHD risk factors, such as fewer than ten years of formal education, current usage of tobacco, and a nuclear family. A study done in neighboring India has also identified the poor knowledge among a sampled Indian population regarding modifiable risk factors of CASHD, especially DM and study notably reveals certain characteristics that are significant predictors of poor knowledge levels of modifiable risk factors. Participants who reported low levels of routine exercise and who are current smokers had a significant poor knowledge level.[17]

This study evaluated the knowledge levels of the modifiable risk factors among sample of Katmandu metropolitan city. The risk factors included smoking, hypertension, elevated cholesterol levels, DM, and obesity. This study also identified gaps in the knowledge of specific risk factors as well as key demographic segments with significantly poor levels of knowledge pertaining to modifiable risk factors of CASHD.

Methods

Community based Cross-Sectional descriptive study design using quantitative method, study was conducted in Kathmandu municipality which consists of 35 wards out of which one ward which was selected by simple random technique lottery method i.e. ward no 5. Confidence interval 95%, allowable error 10% and people having knowledge about modifiable risk factor of coronary artery diseases is estimated to be 50%.

Sample size is calculated by applying following formula:

$$n = 4pq/L^2$$

Where, n = number of sample size

P = 50 %

q = 1-50 = 50%

L = allowable error (10%)

Sample Size (n) = 177

The minimum sample size for the study comes to be 196

Estimated non-response rate 10%

The final sample size is 196

Sampling was done in two phase:

1st phase: From 35 wards of Kathmandu 1 ward was selected randomly by lottery method.

2nd phase: Total house hold serial number of selected ward was identified from election commission record section and data was collected using systemic random sampling i.e. every interval of 34th house was taken and the household head aged 18 years and above were taken for the study .Structured questionnaire for face to face interview was developed. Participants were interviewed by providing with structured questionnaire under supervision to prevent from multiple respondents. Before taking the interview participants were instructed to say "yes" for risk factor that they felt definitely contribute to CASHD otherwise say "not sure".

Out of ten risk factor included in survey , five are clearly known to cause CASHD and additional non-associated risk factors were included in the questionnaire to maintain validity of responses and avoid false positives that could be generated by random responses. After finishing the interview session the correct answers were explained to the participants. This survey questionnaire is taken from similar study done in India.

Correctly identifying four or more risk factor was regarded as good level of knowledge, while identifying three or less risk factors was regarded as poor level of knowledge and this scaling of knowledge is done based on the similar study done in India to assess knowledge of modifiable risk factor of CASHD.[19]

Results

The mean age (SD) was 51.26(13.56) years of the total participants 196. Of the total 67.35% were male. Of the participants 78.5% literate , 0.51% had family history of heart attack, 1.02% were known case of diabetes mellitus, 2.04% were know case of HTN,0.51% were known case of myocardial infarction. The results indicate that the majority (77.55%) of individuals sampled lacked adequate awareness of modifiable risk factors of CASHD. The present study also demonstrates that 27.55% of participants were able to recognize at least two risk factors for heart disease, but only 8.16% of the participants were fully aware of all five key modifiable risk factors of heart disease. This study shows that majority of the respondent lack predefined good level of knowledge regarding modifiable risk factors of CASHD 85.2%, 61.73%, 40.31%, 28.6%, 17.86% correctly identified hypertension, obesity, cholesterol, smoking and diabetes mellitus as modifiable risk factor of CASHD.

Table 2 shows the association between knowledge level and selected variables. Table shows that male respondent do have statistically significant higher level of knowledge than female (p=0.006).Brahmin had higher level of knowledge than any other ethnic group (p= 0.001). Though statistically insignificant literate group had better knowledge about modifiable risk factors than illiterate group. Those participants living in nuclear family had good level of knowledge which is statistically significant (0.041). Those who had quit smoking had good level of knowledge regarding modifiable risk factors of CASHD(0.06). Those who are regular in exercise had statistically significant good level of knowledge (0.006)

Table1: Demographic characteristics of participants (n= 196)

Characteristics	n	%
Age		
below 35 years	24	12.24
above 35 years	172	87.76
Sex		
male	132	67.35
Female	64	32.65
Religion		
Hindu	168	85.71
Buddhist	24	12.24
Christian	3	1.53
Muslim	1	0.51
Ethnic group		
Brahmin	35	17.86
Chetri	60	30.61
Newar	83	42.35
Others	18	9.18
Marital status		
Married	190	96.94
Unmarried	4	2.04
Divorced	2	1.02
Education		
Illiterate	42	21.42
Literate	154	78.58
Family		
Nuclear	85	43.37
Extended	111	56.63
Occupation		
Service	64	32.65
Business	62	31.63
Unemployed	32	16.33
Retired	38	19.39
Smoking habit		
Never used	69	35.2
Current user	106	54.08

ex-user	21	10.71
Exercise		
Non or infrequent	162	82.65
Regular*	34	17.35
Family history of heart attack		
Yes	1	0.51
No	195	99.49
Known case of DM		
Yes	2	1.02
No	194	98.98
Known case of HTN		
Yes	4	2.04
No	192	97.96
Known case of MI		
Yes	1	0.51
No	195	99.49

* at least 3 times a week and greater than 30 minutes during each session.
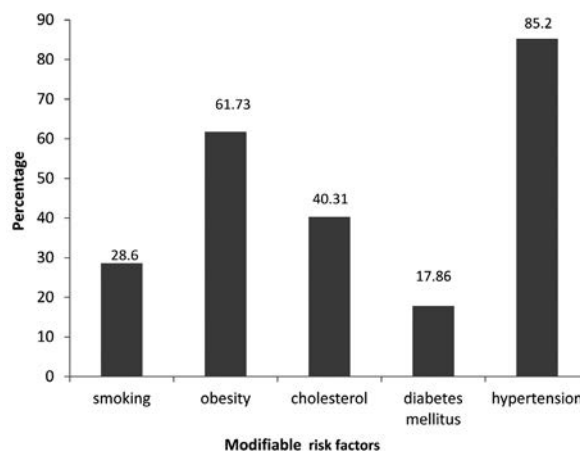
Fig 1: Knowledge of particular risk factors of CASHD (n =196)

Table 2: Association between "good" level of knowledge of modifiable risk factors with specific demographic variables (n =196)

Variables	Good knowledge*	Poor knowledge**	Odds ratio	Lower	Upper	P value
Sex						
Male	37	95	3.171	1.326	7.585	0.006
Female	7	57	1			
Age						
below 35years	6	18	1.175	0.436	3.169	0.749
above 35 years	38	134	1			
Ethnic group						
Brahmin	16	19	4	1.834	8.726	0.001
others	28	133	1			
Education						
illiterate	2	40	0.113	0.031	0.576	0.002
literate	42	112	1			
Family						
Nuclear	25	60	2.018	1.023	3.98	0.041
Extended	19	92	1			
Smoking habit						
current user	22	84	1.31	0.57	3.06	0.49
Excuser	10	11	4.55	1.4	14.99	0.06
Never smoked	12	60	1			
Exercise						
Regular	14	20	3.08	1.398	6.784	0.006
non or infrequent	30	132	1			

* Correctly identifying four or more risk factors.

** identifying three or less risk factors

Discussion

The study indicates that the majority (77.55%) of individuals sampled lacked adequate awareness of modifiable risk factors of CASHD. The present study also demonstrates that 27.55% of participants were able to recognize at least two risk factors for heart disease, but only 8.16% of the participants were fully aware of all five key modifiable risk factors of heart disease. The level of knowledge of participants is considerably lower which is consistent with study done in Pakistan and India.[16,17]

One particular area of interest is knowledge of cigarette smoking as a modifiable risk factor for CASHD. Importantly, only 28.6%of participants correctly identified smoking cigarettes as a modifiable risk factor of CASHD. It is an important and reversible risk factor for CASHD. Incidence of myocardial infarction is increased six fold in women and three fold in men who smoke at least 20 cigarettes per day compared to subjects who never smoked.[18] This result is consistent with study conducted in four tertiary hospital of Pakistan where only31.9% could identify smoking as risk factor.[16] This similar lack of knowledge is found in other south Asians.[19] This finding is especially worrisome that significant number of people fails to identify smoking as risk factor of heart diseases as Nepal has amongst the highest percentage of smokers. In Nepal 49% men and 29% women smoke the highest in the world.[20] It is possible that the very poor awareness about smoking is related to their under representation in mass media campaigns as opposed to smoking and suggests the need for urgent emphasis on education amongst Nepalese. Nepal lacks the infrastructure of educational facilities and programs vital to raising awareness and knowledge of smoking and its contribution to atherosclerotic cardiovascular disease and needs educating the people through mass media and introducing the strong law against smoking at public places.

A significant percentage (82.14%) of participants failed to identify DM as a risk factor. This result is consistent with studies conducted among urban adult Indians that found a low level of awareness of DM.[17,21]

Study shows that there is association between level of knowledge between male and female, male participants have good level of knowledge which is statistically significant (p= 0.006).The possible description of it would be our society is male dominant and literacy rate is higher in male and they do have more health seeking behavior than female.

Brahmin subject showed statistically significant good level of knowledge (p= 0.001). Earlier studies have shown a clear distinction in various health belief and health seeking behavior among different ethnic group.[22] This signifies that while conducting health awareness programs other ethnic group need be in more focused.

Those living in nuclear family have significant association of good knowledge (p= 0.041). A significant majority of the participants 56.63% were noted to be living in an extended family system. Interestingly, subjects who lived in extend family system had less knowledge about modifiable risk factors. One would have thought that those living in an extended family would have been more likely to be exposed to close relatives with heart disease and thus to the advices that was offered but the data do not support this There are several possible explanation of this observation .The frequent and close contact of an extended family system may lead to exposure and reinforcement of traditional and potentially unhealthy health practice and beliefs.[23]

In this study smokers were less knowledgeable about risk factors. Ex-smokers had statistically significant good level of knowledge (0.06) This finding is consistent with other studies conducted in the Saudi Arabia, Pakistan and India.[14,16,17]

Very few people are involved in regular exercise habit. Those who are regular in exercise had statistically significant good level of knowledge (0.006), this finding is consistent wirth previous studies.[11,18,19]

Conclusion

Study finding highlight a striking lack of knowledge of modifiable risk factors among individuals. The result of study have also helped to identify the segment of population who need to be targeted; those includes tobacco users, illiterate grope, those living in extended family system, other ethnic group that Brahmin. The finding of this study suggests that aggressive and targeted education about the relationship of modifiable risk factors specially smoking and DM and about role of exercise with CASHD.

This study call for efforts such as targeted public health education to increase the level of knowledge about the modifiable risk factors of heart disease. The program must be sensitive to the attitude, perception and capabilities of targeted individuals. Physician must also ensure that they impart education to their clients as the patients usually rely on doctors for first hand information .Further epidemiological longitudinal studies and population based are needed in Nepal to assess the knowledge regarding modifiable behavioral risk factors for heart diseases.

Study despite some limitations, should raise strong concern about the lack of knowledge and awareness about the CASHD and should serve as a stimulus for establishing health education programs. Prevention of CASHD is most effective way of combating its epidemic in the resource poor nation like Nepal as it is said that one ounce of prevention is better than one pound of cure.

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Angiographic Studies of Coronary Artery Disease in Dhulikhel Hospital

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Abstract

Background

Coronary Artery Diseases (CAD), one of the the leading causes of death, is increasing globally. The number of CAD is also increasing in Nepal. Dhulikhel Hospital is also providing cardiovascular services to populations from semiurban and rural population of mid region of country. It started coronary angiography services from April 2012. This paper aims to analyze pattern of coronary artery occlusion in patients undergoing coronary angiography during April to September months of 2012.

Methods

There were a total of 36 cases of diagnostic angiography and coronary interventions done in Dhulikhel Hospital from April to September 2012. Among them 32 cases of coronary angiography done for Acute Coronary Syndrome and Stable Angina, were analyzed using SPSS 17.

Results

Males were higher in number than females and majority of the patients were above 55 years. Out of 32 cases, 13 (40.6%) had Acute Coronary Syndrome (ACS) and 19(59.4%) had Stable Angina. Six out of 32 were found to have normal coronaries. One patient with ACS had normal coronary. Out of all the patients with coronary stenosis, four had left main disease, 14 had LAD stenosis, 7 had LCX stenosis and 12 patients had RCA stenosis. Thirteen had severe coronary stenosis. Nine out of 12 ACS patients had more than one coronary artery involved, which is significantly higher than the stable angina group (*P<0.01*). Severe stenosis was found to be more common in ACS group (*p<0.001*) when compared to the stable angina group.

Conclusion

Coronary angiography is a useful diagnostic and therapeutic tool for CAD. Coronary status is significantly different in ACS and stable angina. ACS has more chance of having multivessel stenosis whereas stable angina has single vessel, less severe or normal coronaries. Severity of stenosis is also high in ACS than in stable angina.

Key words Acute Coronary Syndrome(ACS), Stable Angina, Coronary Angiography, Dhulikhel Hospital

Background

The prevalence of Coronary Artery Diseases (CAD), one of the leading causes of death is increasing globally[1]. Each year, approximately 3.8 million men and 3.4 million women die from CAD[2]. It is becoming more significant and growing problem in most of the low-income countries as well[3]. A population based cross sectional study of one major municipality of Nepal showed the prevalence of CAD to be 5.7%[4]. As the number of cardiovascular diseases is increasing in major hospitals in Nepal, CAD has become one of the leading cardiovascular diseases. This can be accounted to the fact that the risk factors of CAD, i.e., smoking, hypertension, diabetes mellitus, dyslipidemia and obesity, have been increasing rapidly. The prevalence of hypertension in urban population is 29%, smoking 31%, diabetes mellitus 19%, metabolic syndrome is 22.5%[5,6,7].

Dhulikhel Hospital, Kathmandu University Hospital is located 30 kilometers east of the capital city Kathmandu of Nepal. This hospital mainly provides services to rural and semi urban population of Kavrepalanchok, Sindhupalhok, Ramechhap, Dolakha, Sindhuli, Bhaktapur and other districts. Hospital has been providing specialty service in cardiovascular diseases for last 10 years. Majority of patients in cardiology department in initial period were Rheumatic Heart Diseases, Cor Pulmonale, CADs and Hypertension. But in the last 5 years the trend has changed into CAD, Hypertension, Heart Failure, Cor Pulmonale and Rheumatic Heart Diseases.

With the increased burden of CADs in Dhulikhel Hospital, many cases need to be referred to centers in Kathmandu for coronary angiogram and other interventions. Duration of transportation from Dhulikhel to Kathmandu and affordability are always challenges for making decisions to refer such cases.

Dhulikhel Hospital started cardiovascular laboratory with Integris Phillips H5000S, Phillips Medical System since April 2012. Indicated cases of Acute Coronary Syndrome and stable Coronary Artery Diseases were investigated with coronary angiography and interventions were done according to necessity.

This paper aims to analyze pattern of coronary artery occlusion in patients undergoing coronary angiography during April to September months of 2012.

Methods

There were a total of 36 cases of diagnostic angiography and coronary interventions done in Dhulikhel Hospital from April to September 2012. Out of these, four peripheral vessels angiography were excluded from study. Remaining 32 cases of coronary angiography were included in the analysis.

Coronary Angiography was performed in ACS according to their presentation. Stable angina patients having continued chest pain were evaluated with angiography.

Coronary angiography and intervention were done using Integris Phillips H5000S, Phillips Medical System. All coronary angiographic studies were performed from femoral approach using standard catheters and techniques. Each coronary artery was selectively viewed in at least two projections.

Two separate observers analyzed the reports, imaging materials and documents independently. Data analysis was done using SPSS 17.

Grading of Stenosis was done as per the following criteria:

0 Normal	Absence of plaque and no luminal stenosis
1 Minimal	Plaque with <25% stenosis
2 Mild	25% - 49% stenosis
3 Moderate	50% - 69% stenosis
4 Severe	70% - 99% stenosis
5 Occluded	

Based on disease severity, obstructive CAD was classified as single-, double-, or triple- vessel disease. More than 50% of stenosis was considered to be significant occlusion.

Results

The age and sex distribution of the patients is listed in Table 1. Males were higher in number than females and majority of the patients were above 55 years.

Table 1: Age and Sex distribution

Sex	(n=32)	Percentage
Male	19	59.4
Female	13	40.6
Age	(n=32)	
30-44	5	15.6
45-54	2	6.3
55-64	10	31.3
>65	15	46.9

Regarding the clinical diagnosis prior to coronary angiography, 13 (40.6%) had Acute Coronary Syndrome (ACS) and 19(59.4) had Stable Angina.

Table 2 shows the risk factors of CAD among the patients.

Table 2: Risk Factors of CAD among the patients who underwent coronary angiography.

Risk Factors	Number	Percentage
Hypertension	11	34.4
Diabetes Mellitus	10	31.2
Dyslipidemia	4	12.5

The angiographic findings showed that majority of the cases had coronary stenosis. (Table 3)

Table 3: Angiographic Findings

Angiographic findings		Percentage
Coronary stenosis	26	81.3
Normal coronary arteries	6	18.7

Six out of 32 were found to have normal coronaries. One patient with ACS had normal coronary .

Out of all the patients with coronary stenosis, four had left main disease, 14 had LAD stenosis, 7 had LCX stenosis and 12 patients had RCA stenosis. Thirteen had severe coronary stenosis. The coronary stenosis in different epicardial arteries is listed in table 4

Table 4: Stenosis Grading in different coronaries

	<25%	25-49%	50-69%	70-99%
Left Main (n=4)	3	-	-	1
LAD prox (n=14)	4	5	3	2
LAD mid (n=10)	7	2	-	1
LAD distal (n=6)	3	-	1	2
LCX prox (n=7)	5	1	-	1
LCX distal (n=7)	3	2	-	2
RCA prox (n=12)	6	4	1	1
RCA mid (n=12)	5	3	1	3

(LAD= left anterior descending, LCX= left circumflex, RCA= right coronary artery)

Table 5 shows the classification of coronary stenosis between ACS and Stable Angina groups in terms of number of vessels involved. Nine out of 12 ACS patients had more than one coronary artery involved, which is significantly higher   than the stable angina group (*P<0.01*).

Table 5: Coronary Stenosis classification

	Normal	Single	Double	Triple	Level of significance
ACS	1	3	6	3	
Stable Angina	11	4	3	1	P<0.01

Table 6 shows the level of stenosis between two groups. Severe stenosis was found to be more common in ACS group (*p<0.001*) when compared to the stable angina group. (Table 6)

Table 6: Grading of Coronary Stenosis

	Less Severe Stenosis (<70%)	Severe Stenosis (>70%)	Level of significance
ACS	2	10	p < 0.001

| Stable Angina | 5 | 3 | |

(a)
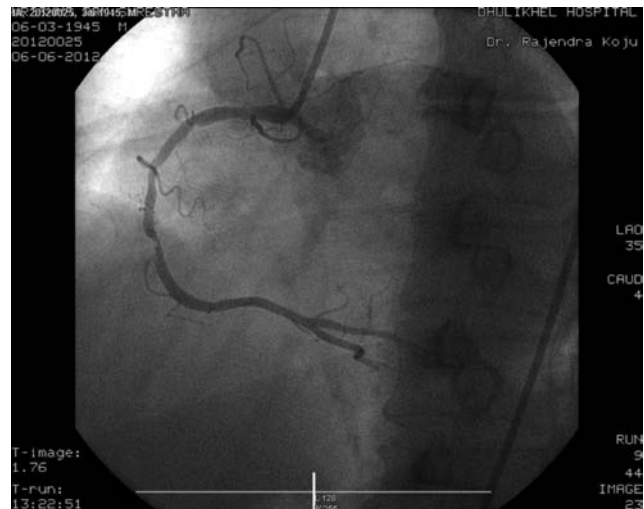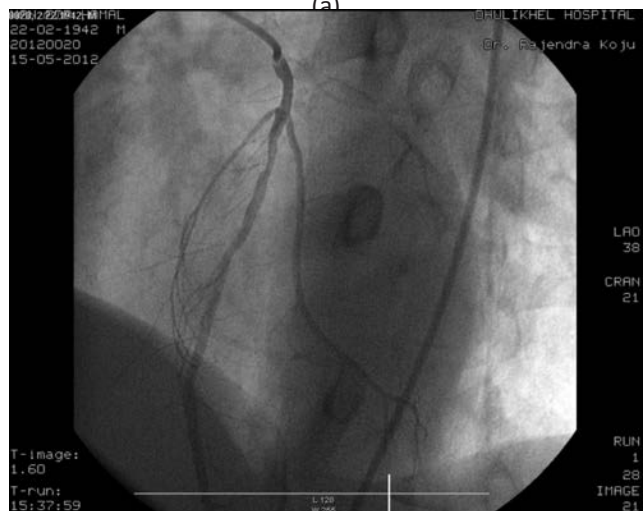
(b)

Figure: Coronary Stenosis in RCA(a) and LAD(b)

Discussion

Acute coronary syndrome and stable angina are the clinical presentations of coronary artery disease. Majority of CAD is due to atherosclerosis. The clinical presentation depends upon the pathology of atherosclerosis. The process of atherosclerosis may vary between patients. The atherosclerosis causing stenosis and complete blockade can be assessed with coronary angiography, computed tomography. The coronary angiography helps to identify the coronary anatomy and luminal diameter correctly. With its multiple view, coronary   lumen can be better evaluated and intervened as per necessity.

Studies have found that majority of patients (60%) were male. Patients more than 65 years were 47%. Majority of CAD has multiple risk factors. This study also shows that

that 34% of studied population had hypertension, 31% had diabetes mellitus and 12% had dyslipidemia.

Not all ACS or stable angina cases in this study had coronary stenosis which supports the report by Germing A et.al.[8] Our study showed that 19% of study population who had either ACS or stable angina had normal coronaries. In comparison to stable angina, normal coronaries were less frequent in ACS group.

The progression of coronary artery disease is commonly observed with history of stable angina. Progression in acute presentations of ACS usually evolves from a previously insignificant rather than a previously significant stenosis[9]. Our study showed that 58% of stable angina had normal coronaries, 26% had less severe stenosis and only 16% had severe form of stenosis. In ACS group 77% had severe stenosis, 22% had less severe stenosis and only 0.8% had normal coronaries.

This study found that 70% of ACS patients had more than one vessel involved whereas 21% of stable angina patients had more than single vessel involved. Looking at the severity of stenosis and number of vessels involved, ACS had more complex in nature. Ambrose JA et.al., reported that unstable angina has more irregular and multiple narrowings compared to stable angina[10]. This finding is also supported by Manukov IH et.al. who found that the incidence of acute coronary syndrome - unstable angina or myocardial infarction – is higher in complex stenosis[11].

Conclusion

Coronary angiography is a useful diagnostic and therapeutic tool for CAD. Coronary status is significantly different in ACS and stable angina. ACS has more chance of having multivessel stenosis whereas stable angina has single vessel, less severe or normal coronaries. Severity of stenosis is also high in ACS than in stable angina.

Limitation

One of the major limitations of this study is the small sample size. Moreover, the evaluation of coronary lesion was also limited. Further studies with higher number of individuals and more elaborated evaluation are required to identify the pattern of coronary artery problems in patients undergoing coronary angiography.

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CD36 in atherosclerosis

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CD36 was described nearly 30 years ago as "glycoprotein IV" the fourth major band of 88KD observed on SDS-PAGE of platelet membrane (1). It is present on many mammalian cell types: microvascular endothelium; professional phagocytes including macrophages, dendritic cells, microglia and retinal pigment-epithellium; erythroid precursors; hepatocytes; adipocytes; cardiac and skeletal myocytes; and specialized epithelia of the breast, kidney and gut (2). As a pattern recognition receptor, CD36 binds a diverse set of ligands, including oxidized low-density lipoprotein (oxLDL)(5), anionic phospholipids (4), long-chain fatty acids, thrombospondin-1, fibrillar -amyloid, and the membrane of cells undergoing apoptosis (3, 5, 6). CD36 has been implicated in a wide variety of normal and pathologic biological functions, including angiogenesis, atherosclerosis, phagocytosis, inflammation, lipid metabolism, and removal of apoptotic cells (3, 5). In 1993, Endemann et al. first identified CD36 as a potential oxLDL receptor (7).Unlike macrophage scavenger receptor A type I and II, CD36 binds LDL that has been exposed to minimally oxidizing condition. The observation that CD36 was an oxLDL receptor was the catalyst for many to prove the role of CD36 in atherosclerosis.

Atherosclerosis is a progressive chronic inflammatory disease characterized by a gradual thickening and hardening of arteries that ultimately leads to the reduction in the lumen diameter and potentially to ischemia following plaque rupture. A first stage of the disease is the presence of dysfunctional endothelial cells which, via adhesion molecules and expressed cytokines, recruit circulating monocytes and a subpopulation of lymphocytes (CD4/CD8) into the intima. Endothelial dysfunction may be induced by oxLDL. Indeed low density lipoprotein (LDL) when infiltration into the intima can be readily oxidized by resident macrophages or endothelial cells. Moreover C-reactive protein (CRP) and oxLDL can act synergistically to increase monocyte inflammatory properties (through MCP-1, PGE-2, MMP-1 production) and attract further circulating monocytes through the release of MCP-1 to adhere to the activated dysfunctional endothelial cells and extravasate to the intima to scavenge oxLDL(8).

Receptor mediated endocytosis of modified LDL by macrophage has been implicated in the pathogenesis of atherosclerosis. The uptake of modified lipoprotein by macrophages leads to lipid laden foam cells and fatty streak development in the arterial wall, one of the earliest steps in the progression of the atherosclerotic plaque(9). Further work to define the ligand on oxLDL that was recognized by CD36 implicated the lipid of the lipoprotein. Podrez et al. showed that CD36 can recognize LDL modified by the Myeloperoxidase-hydrogen peroxide-nitrite system of phagocytic cell (MPO-OxLDL) which may have more physiological relevance than copper oxidized of acetylated-low density lipoprotein (acLDL) (10). The same

authors have also shown that CD36 is the major receptor for LDL modified by monocyte generated reactive nitrogen species. MPO-oxLDL dependent foam cell formation can be inhibited by as much as 80% with monoclonal antibodies (mABs) against the CD36 (11).In 2002, Podrez et al. identify specific trauncated fatty acid moieties as a recognition motif for CD36 (12).

The relative importance of SR-A and CD36 in macrophage response to different forms of modified LDL and the compensatory mechanism for lipid uptake in their absence was revealed by Vidya et al. (2002) by generating mice lacking both SR-A and CD36. The binding, uptake and degradation of acLDL as well as MPOoxLDL were determined in wildtype macrophage and in those lacking either one or both receptors. They conclude that SR-A and CD36 were responsible for the preponderance of modified LDL uptake in macrophages and that other scavenger receptors do not compensate for their loss (13).

In 2000, Febbraio et al. showed the role of CD36 in foam cell formation. Incubation of CD36 deficient monocyte/macrophage with oxLDL results in only 40-60 % as much oxLDL binding, internalization and cholesterol ester accumulation as is seen in CD36 expressing cells. The study of CD36 null mouse has the most compelling data to support the critical role of CD36 in foam cell formation where macrophages isolated from the CD36 null mouse were profoundly defective in uptake of oxLDL and foam cell formation (14).

OxLDL has been shown to bind to macrophage CD36 via its lipid moiety and to other receptors via its apoptotic moiety (15). Using computational modeling, oxLDL binding domain on CD36 was shown to contain a structure with a positively charged groove formed by a lysine cluster which specifically interact with negatively charged ligands such as oxLDL (16). OxLDL bound to CD36 is than endocytosed through a raff mediated pathway that appears to be independent form cavoile, caveolin 1 and clathrin mediated internalization (17). Following oxLDL stimulation,transcriptional factor PPARgamma is transactivated via a P38 MAP kinase dependent pathway (18) and heterodimerised with retinoid X receptor(RXR). The PPARgamma-RXRalphacomplex binds directly to PPAR response elements (PPRES) in the CD36 promotors and induces an increase of CD36 expression (19). Moreover OxLDL mediated CD36 upregulation was reported to be involve initial activation of protein kinase C (PKC) with subsequent PPARgamma activation (20).

Although PPAR activation is clearly an important component of CD36 signalling in monocyte and macrophages, most of the responces to CD36 ligands can not be accounted for by a transcriptional mechanism. For example, internalization of large particulate ligands require rapid induction of intracellular signals to effect cytoskeletal reorganization and direct internalized ligands to specific intracellular compartments but doesn't require new protein synthesis. Similarly the rapid proinflammatory, prothrombotic responses are mostly non transcriptional (21).

Flow chart showing CD36 mediated macrophage foam cell formation (22)

1.   Extracellur enjury leads to the transmigration of macrophage and LDL into subendothelial space.

2.   Inflammatory stimuli insists endothelial cells and macrophages to secrete oxidative products like Nitric oxide, hydrogen peroxide and myeloperoxidase.

3.   These oxidative products act upon LDL particles to convert them into CD36 specific ligands or lagands for other scavenger receptors

4.   After internalization of OxLDL via CD36, various lipid biproducts are generated(9-HODE, 13- HODE and PGJ-2) mediated by lipoxigenase or other pathways.

5.   These lipid biproducts provide ligands for the transcription factor PPARgamma which enables PPAARgamma to dimerise with binding partner such as RXR and charges the complex for nuclear translocation and activation of transcription of target genes. This arrises the positive feedback loop.

6.   The increased expression of CD36 promotes further oxidized LDL uptake perpetuating the cycle resulting in accumulation of cholesterol ester by macrophage and eventually in foam cell formation.

Laungrath et al. has provided important potential in vivo relevance for the previously defined interactions of CD36 with LDL. They show evidences for appreciable expression of CD36 in isolated hepatocytes though it was previously believed that the expression of hepatocytes CD36 was low because in liver, major cell types, hepatocytes, endothelial cells and kupffer cells also express CD36. The significant expression of CD36 in hepatocytes was supported by complementary data in vitro to invo work. Using mice deficient in CD36, SR-BI or both and holoparticles or cholesterol ester radiolabelling, their studies demonstrate a role for CD36 in retardation of LDL clearance by hepatocytes and significant role of CD36 in oxLDL clearance (23). In contrast, de Villers et al. (2001) has shown that CD36 doesn't play a direct role in HDL or LDL metabolism. It was shown by using an overexpression adenovirus strategy but examining only lipoprotein profile (24).

Conclusion:

CD36, a class B scavenger receptor protein is also known as FAT (Fatty Acid Translocase), SCARB3 (Scavenger receptor B 3), GP88 (Glycoprotein 88), GPIV (Glycoprotein IV) and

GP IIIB (Glycoprotein III B).Dimerisation has been purposed to play an important role in CD36 signal transduction. On binding with the ligand, the protein and ligands are internalized which is independent of macropinocytosis and occurs by an actin dependent mechanism requiring the activation of Src Family Kinases, JNK and Rho-family GTPase.

oxLDL, Thromspondin 1, collagen, Long Chain Fatty Acid, apoptotic cell membrane, oxidized phospholipids, Fibrilliar beta amyloid and erythrocyte parasitized with Plasmodium falciparum are ligands for CD36. They are omnipresence more commonly found in microvascular endothelium, platelets, monocytes, cardiac and skeletal muscle, skin microdermal cells, microglia, macrophages and adipocytes. Apart from angiogenesis, lipid metabolism, phagocytosis, and inflammation, CD 36 has an important implication in atherosclerosis. Specific trauncated fatty acid moieties in

oxLDL are the recognition motif for CD36. The uptake of modified lipoprotein by macrophages leads to lipid laden foam cells and fatty streak development in the arterial wall. Transcription factor PPARgamma plays important role in receptor mediated endocytosis which is transactivated via a P38 MAP kinase.

Recent study by Laungrath et al (2008) demonstrated a role of CD36 in retardation of LDL clearance by hepatocytes and significant role of CD36 in oxLDL clearance. Whereas it was already shown that CD36 didn't play direct role in HDL and LDL metabolism. What is the proper mechanism for the uptake of LDL and oxLDL by CD36? This is the question yet to be answered properly. In atherosclerosis, much has been said and done on the superficial mechanism of macrophage foam cell formation, one of the early steps in atherosclerosis. But still the development of therapeutics and their application is not defined clearly.

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Case Report

Congenital Absence of pericardium

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A 30- year-old physically active male presented to us for evaluation of left sided chest pain which was non-exertional in nature. He described it as being of pricking type and non-radiating .His past history was not significant. Physical examination revealed a non-palpable apical impulse with no other abnormal findings.

A chest x-ray (P-A view) revealed levoposition of heart, loss of the right heart border (hidden by spine) and prominence of pulmonary artery segments(Fig 1).A "tongue" of lung interposing between aorta and pulmonary artery was not evident in chest x-ray in this case.

ECG was taken in the supine position with precordial leads placed in the standard position , which revealed right axis deviation, right bundle branch block(RBBB) pattern and poor R wave progression(Fig2).

Transthoracic echocardiography revealed unusual windows with marked lateral displacement of apical windows. Lateral placement of the transducer was also necessary for parasternal axis views. Right atrium and right ventricles were mildly dilated. Echocardiography excluded other structural heart diseases (Fig 3 and Fig 4).

As the above findings were suggestive of the diagnosis of congenital absence of pericardium, further investigations including CT chest and cardiac MRI were done to confirm the diagnosis. CT thorax(Fig 5), also suggested absence of pericardium.

Axial T1 weighted cardiac MRI revealed markedly rotated axis of the the heart with mildy dilatation of ventricles. Lung was seen insinuating between aorta and pulmonary artery. Pericardium was absent(Fig 6). Thus, the diagnosis of total absence of pericardium was confirmed.

Patient was advised to continue activities without limitation and was not referred for any kind of intervention.
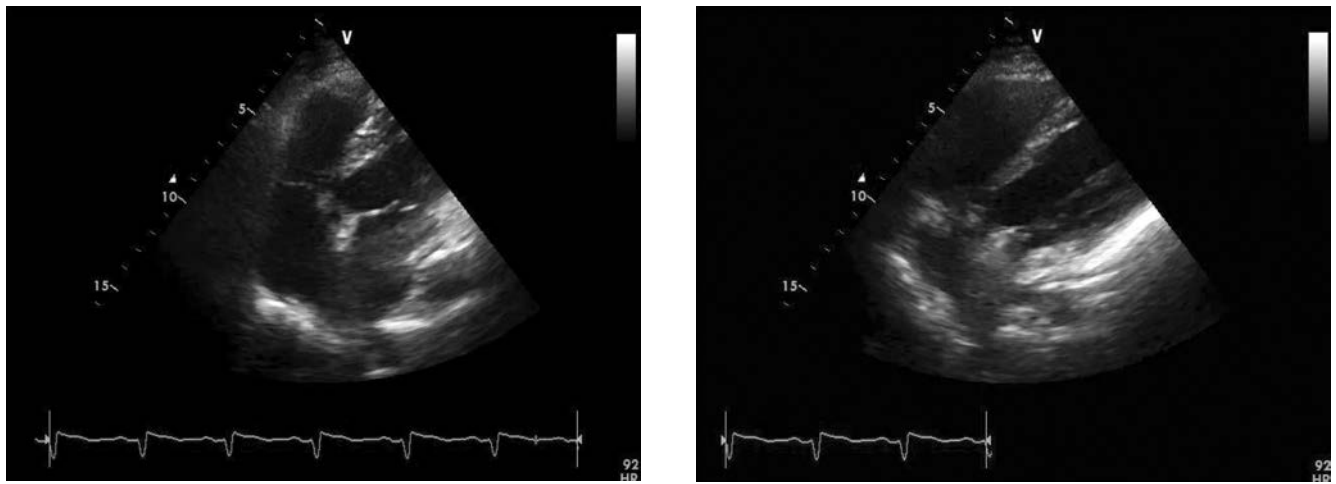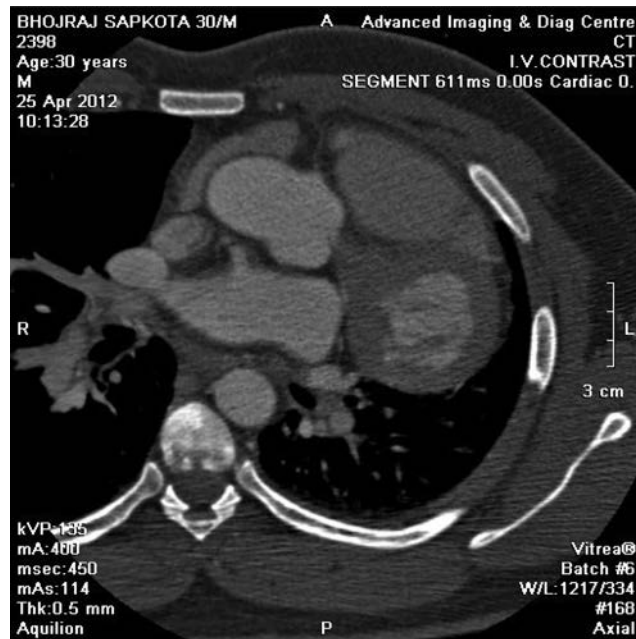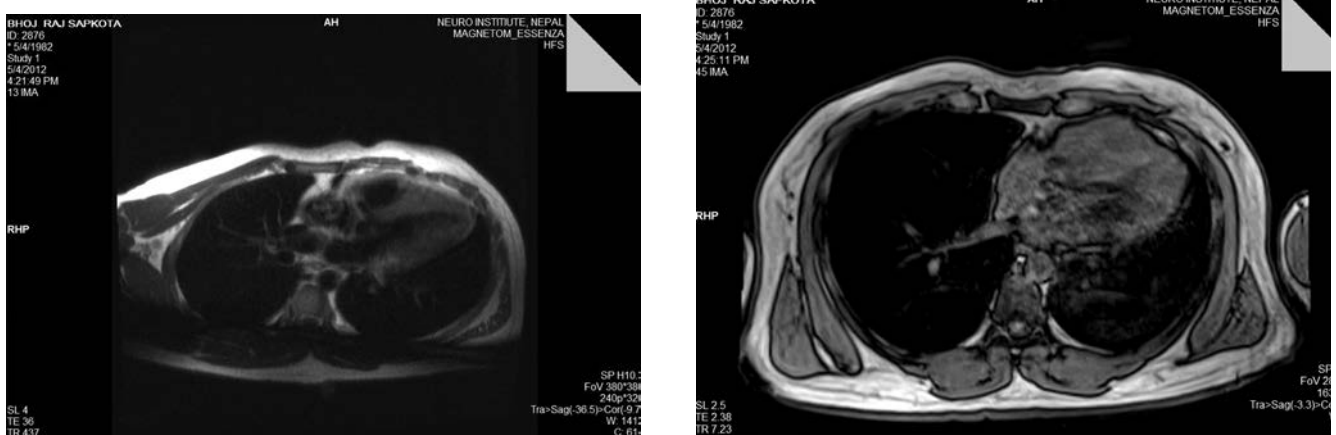
Fig 1

Fig 2.

Fig 3.

Fig 4

Discussion

Isolated congenital absence of pericardium includes a range of congenital pericardial defect from a small foramen in the pericardium to a complete absence of the entire pericardium[1].The clinical presentation is non-specific. In most reported cases, the problem was detected incidentally in asymptomatic individuals. However, some subjects may present with symptoms of atypical chest pain, dyspnoea and palpitations. Physical examination may reveal a laterally displaced apex or absent apical impulse and systolic murmurs and clicks of undetermined origin.[2] [3]Patient may also present with complications clearly related to the defect, most common one being herniation and incarceration of the myocardium, predominantly left atrial appendage[4]. Ventricular herniation has been also described[5].Other complications include torsion of great vessels secondary to increased cardiac mobility, coronary artery compression by the edge of pericardial defect. All these complications have been associated with presentations varying from chest pain to infarction, syncope, tricuspid regurgitation and sudden death [6].Therapeutic options are mainly based on small retrospective series. It is recommended that patients presenting with complications should be treated with surgery. For those without complications various strategies have been proposed. Total or large defects without complications do not need surgery as it was in our case. Small or moderate size defects can be considered for surgery. Surgical options include both pericardiotomy or pericardioplasty. The former enlarges the defect to reduce the risk of incarceration while the later attemps to achieve the same goal by direct closure or closure of the defect by a synthetic material.

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Complete heart block in Acute Rheumatic fever

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Abstract

Rheumatic fever can cause a variety of cardiac conduction disturbances. First-degree heart block is a common electrocardiographic manifestation of acute rheumatic fever and is included in Jones' diagnostic criteria. Other electrocardiographic changes such as sinus tachycardia, bundle branch blocks, nonspecific ST-T wave changes, atrial and ventricular premature complexes have been reported with variable frequency. However, complete heart block is an exceptionally rare manifestation of acute rheumatic fever. We report a 15 years female who developed Complete heart Block during an episode of acute rheumatic carditis. The patient was successfully treated with conventional treatment and Temporary Pacemaker.

Key words Acute rheumatic fever, Carditis, Complete heart block.

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Case report

A 15 years girl was brought to emergency with fever, joint pain, and sweating 2 weeks duration. Fever was high grade associated with chills and sweating. Joint pain was migratory in nature involving the large joints like ankle, knee, elbow and wrist. It was also associated with palpitation, shortness of breath NYHA class III. It was not associated with skin lesion, subcutenous nodule, syncope and seizure.

On examination she was tachycardic with heart rate of 150/min. Her BP was 100/70 mm of hg. Her JVP was raised, minimal pedel oedema was present. CVS examination revealed LV 3rd heart sound and Pansystolic murmer of mitral regurgitation. Joint examination revealed swollen right knee and left wrist joint. All other joints were normal.

On investigation TLC=21,000 N85,L13,M01,E01, Hb-10.9 gm%. ECG-sinus tachycardia, Echo-Mild pericardial effusion, Mild MR and Mild AR, LVEF 45-50%. Her ESR was 60 mm in 1st hour, CRP +++ and ASO >200. Her CXR PA view- B/L minimal pleural effusion, right more than left.

She was diagnosed and managed in line of Acute Rheumatic Fever with heart failure as she had two major Jones criteria(Carditis-pancarditis and arthritis). Decongestion along with steroid and Benzathine penicillin was started. After 12 hrs of hospital admission she developed complete RBBB alternating with LBBB which later progressed to CHB(fig 1). Temporary pacemaker lead was inserted immediately and kept for 7 days. Complete heart block remained for 4 days and reverted to sinus rhythm. On the 7th day her ECG revealed sinus tachycardia so TPI lead was removed. Echo repeated revealed increased severity AR and MR (Mod AR and Mod MR) with Mild pericardial effusion with LVEF of 40-45%. Investigations to rule out other causes of heart block were sent including APLA, ANA, DSDNA, LYME serology was negative. On the 2nd week of her treatment tachycardia persisted, effusion resolved, but MR and AR severity persisted. On the 3rd week she remained afebrile. Her NYHA functional class decreased to II. Her counts decreased to normal. Her steroid dose was tapered and she was discharged with ASA after 4 weeks of hospital admission.
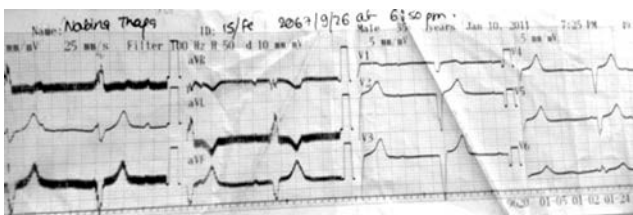

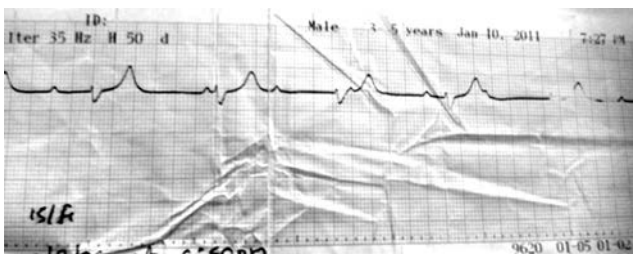**Fig 1: ECG after 4 days of admission showing CHB @ 50 bpm**

Fig 2: Complete Heart Block with ventricular escape rate of 50/min
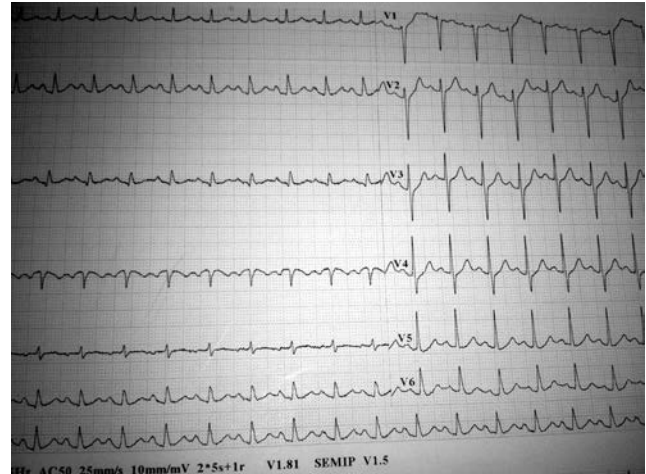

Fig3: Sinus tachycardia with a rate of 114/min

On follow up after 2 weeks her symptoms improved. Her counts were decreased. ECG revealed features of LV volume overload and LAE. MR and AR severity increased to Severe AR and severe MR, no pericardial effusion and normal LVEF 55-60%. She was advised with tapering dose of ASA and to come after 4 weeks. After 4 weeks she came with NYHA functional I though her severity of AR and MR persisted. Her LVEF-60%. She is on regular F/W doing well with with NYHA class I symptoms.

Discussion

Disturbances in cardiac conduction and rhythm are common during the acute phase of rheumatic fever. Almost 40% to 60% of patients exhibit a delay in AV conduction, which is manifested by a prolonged PR interval.[2,4] Besides first-degree AV block, other disturbances encountered in acute rheumatic fever include second-degree AV block, junctional tachycardia with and without AV dissociation, and premature ventricular contractions. Rarely, complete heart block.[1,2,5,6] have been reported. It has been reported that, although advanced-degree AV block is a manifestation of cardiac involvement, it has not been noted to be consistently associated with valvulitis.[7] Thus the presence of advanced-degree AV block had not had the prognostic implications of valvulitis.[7] While valvulitis usually results from valvular damage with irreversible structural changes in the heart, advanced-degree AV block appears to represent involvement of the conduction pathways of the myocardium and does not appear to result from irreversible myocardial damage that can be detected clinically or even electrocardiographically.[5,8] Second- and third degree AV block may be considered a manifestation of ARF only when associated with other major Jones criteria, even in the absence of valvulitis. However, in the absence of other major criteria, isolated second- and third-degree AV block is most often caused by conditions other than ARF.[5] In our patient complete heart block was associated with valvulitis, myocarditis, pericarditis and arthritis. Hence, the reason was accepted as ARF. The exact mechanism by which the rheumatic process causes conduction disturbances is unknown. Immunologic relations between the group A streptococcus and the glycoproteins of cardiac valves, nonetheless, have been well established.[9] Such a relationship, however, has yet to be associated with the conduction system. Furthermore, the atrioventricular node has a very low content of

glycoprotein compared with the peripheral conduction system.10 Cristal et al.11 showed, in their study of 70 patients with acute rheumatic fever, that although atrioventricular block of advanced degree is a manifestation of cardiac involvement, it was not noted consistently to be associated with valvulitis. While valvulitis usually results in damage to the leaflets, with irreversible structural changes in the heart, advanced atrioventricular block appears to represent involvement of the conduction pathways in a reversible fashion.7,12,13 It is found from the studies that although atrioventricular block of advanced degree occurring in a child can be a dramatic event during acute rheumatic fever, it appears to be a temporary event, resolving over a period of days with conventional treatment.7,12,13 Specific treatment, such as a temporary pacemaker, should be considered only when there is syncope due to the block, or there is a Adams-Stokes attack12 or haemodynamic compromise.7,13

In conclusion, malignant arrhythmias like complete heart block may develop in ARF. Hence, these patients must be monitored carefully. The physician must pay attention to the recent-onset complains of the patients during the treatment.

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Spontaneous coronary artery dissection

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A 38 year old previously healthy woman was referred to ER for ongoing chest pain. She had sudden onset of central, crushing chest pain 3 h back and her ECG was found to have evidence of acute infero-lateral wall MI. There was no history of cardiovascular disease or identifiable CAD risk factors. She had a history of bone TB 10 y back. She was on oral contraceptive pills 5 y back. Her mother had hypertension and diabetes mellitus. Her father died at the age of 75 y due to unknown cause and had a history of hypertension. There is no history of hypertension, diabetes mellitus or CVD in her siblings.

General Examination: O2 saturation-95%, Pulse-88bpm, Bp-110/90mmHg.Systemic Examination: no abnormality detected. Investigation: CBC, RFT, BSR, and Electrolytes were WNL. ECG: ST elevation in infero-lateral leads 3 h back but minimal ST elevation in lll and AVF in our ER. Cardiac Biomarkers: CPK-MB-50u/l and Trop + .Echo screening: hypokinetic apex, apical IVS and apical inferior LV wall.

She was diagnosed as acute infero-lateral wall MI and was admitted in CCU was treated with Aspirin, Clopidogrel ,LMWH ,Atorvastatin ,IV GTN , Beta-Blocker, Anxiolytics ,PPI and Stool softener .She was well on first post MI day but suddenly developed chest pain on second post MI day and her ECG showed ST elevation in V3-V6. She was taken to Cath lab for rescue PCI. Her coronary angiography studies revealed a linear dissection involving the distal LAD with TIMI 3 distal flow (Fig1). She was conservatively management and was discharged on 7 post MI day.
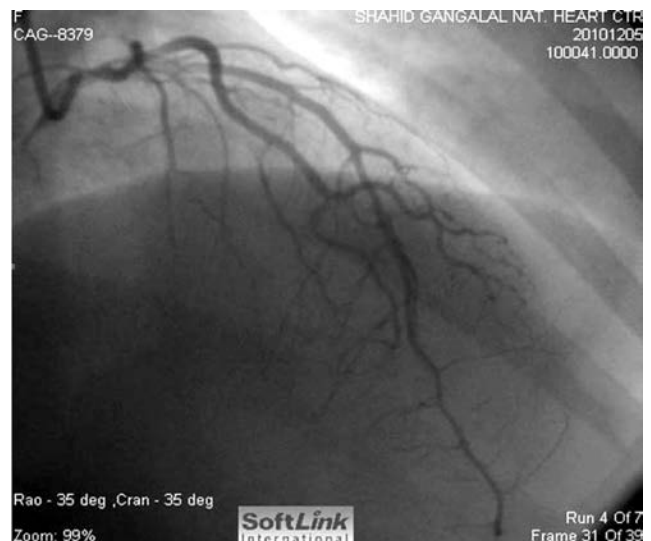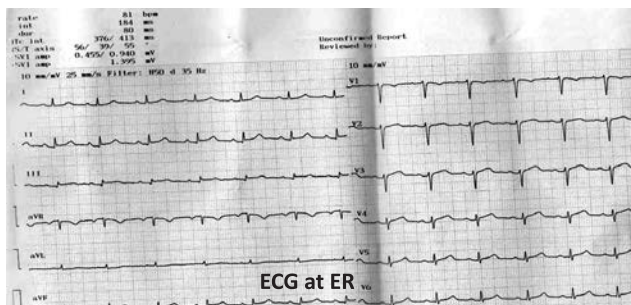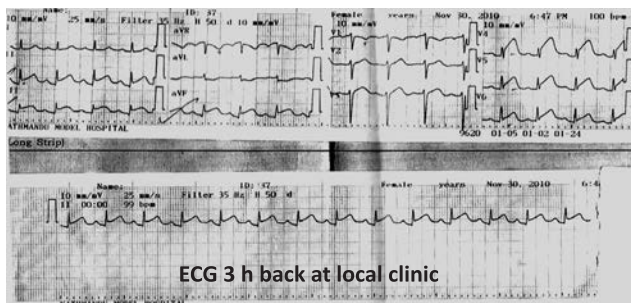

ECG 3 h back at local clinic

ECG at ER

Fig 1. Dissection in the distal LAD with TIMI 3 distal flow.

Spontaneous coronary artery dissection

Spontaneous coronary artery dissection (SCAD) is a very rare cause of acute coronary syndromes (1). SCAD can be primary or secondary. Primary dissections occur spontaneously whereas secondary dissections occur as an extension from aortic root dissection or following an insult as a consequence of coronary angiography, coronary intervention, cardiac surgery or chest trauma(2).

Incidence

The first case of SCAD was described in 1931 by Pretty in a 42 year old woman who had a sudden cardiac death (3). Initial cases were based on autopsy findings after sudden cardiac death. The incidence of SCAD in angiographic series
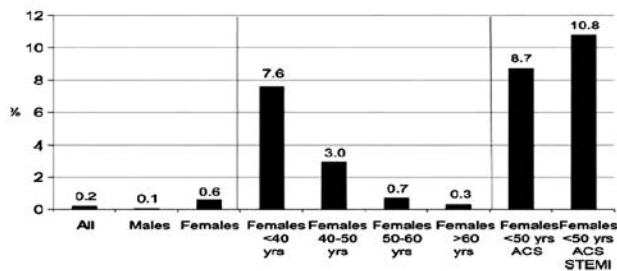
varies widely from 0.07% up to 1.1% for patients who are referred for coronary angiography (4). The mean age at presentation is 30-45 years (5). More than 70% of SCAD cases are women, and in approximately 30% it occurs during the peripartum period (6). Among women, the incidence of SCAD was highest in women below the age of 40 years (Fig 2) and decreased significantly with advancing age (4). Although not invariable, left coronary artery dissections are more common in women, the RCA is usually involved in men. Overall, the LAD artery is affected in 75% of cases, the RCA in 20% of cases, the left circumflex artery in about 4% of cases, the LMCA in < 1% of cases and multivessel coronary dissection was observed in about 20 %(7).

Pathogenesis and etiology

SCAD remains an unclear aetiopathologic entity. SCAD results from vessel wall haematoma formation in the outer third of the media or between the media and the adventitia in the absence of traumatic or iatrogenic causes, resulting in a false lumen (8) .Expansion of this lumen through blood or clot accumulation leads to distal propagation of the dissection and to compression of the real lumen, causing myocardial ischemia (9). An intimal tear is only seldom observed.

The most common pathologies associated with SCAD are coronary atherosclerosis and vascular changes occurring during the peripartum period. Other causes of SCAD are

connective tissue disorders, systemic lupus erythematosus vasculitis, cocaine abuse, vigorous exercise, and prolonged sneezing. However, a large number of cases must be classified as idiopathic because no underlying condition can be detected.

SCAD in the peripartum period

The pathogenesis of SCAD in the peripartum period is still unclear. Hemodynamic factors together with arterial wall changes related to pregnancy, a lytic action of proteases released from eosinophils, and intimal tears are the main hypotheses presented to explain the pathophysiology involved (10). Changes in the concentrations of sex hormones are thought to alter the normal arterial wall architecture, resulting in an increased susceptibility to spontaneous dissections (11). The changes in the vascular wall include smooth muscle cell proliferation, impaired collagen synthesis, and alterations in the protein and acid mucopolysaccharide content of the media.

During pregnancy total blood volume and cardiac output are increased. This may lead to augmented shear forces on the luminal surface and an increased wall stress in pregnancy and particularly during labour. Both vascular and hemodynamic changes occurring during pregnancy and labour therefore predispose the coronary arteries to the development of intramural dissections (12).

One third of all SCAD cases in women occur in the peripartum period, of which one third occur in late pregnancy and two thirds in the early postpartum period (11). The peak incidence is within the first 2 weeks after delivery. The earliest reported case presented at 9 weeks of conception and the latest 3 months postpartum. Only 30% of the patients in this group have known risk factors for coronary artery disease (11). Patients with advancing age and multiparity have an increased risk for SCAD (11).

In a population based study of more than 12 million deliveries in the USA, the incidence of acute myocardial infarction was 6.2 per 100 000; 45% of the women diagnosed with acute myocardial infarction underwent coronary angiography and 37% have undergone a revascularization procedure. A recent review of the literature revealed a high incidence of risk factors for ischaemic heart disease in patients with pregnancy associated myocardial infarction. Evaluation of coronary artery morphology (angiographically or at autopsy) revealed a dissection only in 28% of the patients, whereas a coronary stenosis was observed in 40%. Coronary dissection was the primary cause of infarction in the peripartum period (50%) and was found more commonly in postpartum compared with antepartum cases 34% vs 11%(13).

Clinical Presentation

The clinical presentation ranges from unstable angina, acute myocardial infarction, ventricular arrhythmias to sudden cardiac death (14). In rare instances it can be asymptomatic and discovered incidentally on coronary angiography. Whenever a young patient without major coronary risk factors or a woman in the postpartum period presents with an acute coronary syndrome or sudden cardiac death, the possibility of a SCAD should be suspected and an urgent coronary angiography considered.

Diagnosis

Early coronary angiography remains essential in the diagnosis of SCAD (15). Additional intravascular ultrasound (IVUS) and Optical coherence tomography (OCT) imaging provides very detailed information on the location and extent of the dissection (16, 17). CT coronary angiography is useful in the follow-up of conservatively managed patients.

Coronary angiography

Angiographically coronary dissections can be graded according to the National Heart, Lung, and Blood Institute classification system developed by the Coronary Angioplasty Registry (15). This system grades coronary dissections based on angiographic appearance as types A-F. Type A dissections represent radiolucent areas within the coronary lumen during contrast injection, with minimal or no persistence of contrast after the dye has cleared. Type B dissections are parallel tracts or double lumen separated by a radiolucent area during contrast injection, with minimal or no persistence after dye clearance. Type C dissections appear angiographically as contrast outside the coronary lumen, with persistence of contrast in the area after clearance of dye from the coronary lumen. Type D dissections represent spiral luminal filling defects, frequently with extensive contrast staining of the vessel. Type E dissections appear as new, persistent filling defects. Type F dissections represent those that lead to total occlusion of the coronary artery, without distal anterograde flow.

Management

There is no specific guideline on how to manage patients with SCAD. Treatment options for SCAD include medical therapy, percutaneous coronary intervention (PCI), or coronary artery bypass graft surgery (CABG). The decision to manage SCAD conservatively with medication or to perform PCI or CABG must be individualized based on both clinical and angiographic factors. When there is no evidence of ongoing ischemia or hemodynamic instability, SCAD can be managed successfully with medical treatment alone (18). With conservative management partial or even complete angiographic resolution of coronary artery dissections has been observed after a follow up period of 2 months to 1 year. Coronary CT angiography can be used as an alternative imaging method for the assessment of angiographic resolution after medical treatment of SCAD. Medical management of SCAD is similar to the treatment of acute coronary syndromes. If a pronounced dissection persists in a major vessel after prolonged medical treatment, or in SCAD causing marked epicardial coronary flow impairment and/or ongoing ischemia, PCI or CABG should be considered. PCI with stenting can restore flow in the true lumen, relieving ischemia, and seal the dissection, preventing further expansion. Technical difficulties during PCI include advancing the guidewire in the true lumen rather than in the false lumen, and avoiding distal propagation of the intramural haematoma and dissection during stent delivery. The latter can be prevented by deploying the first stent with sufficient coverage of the distal border of the dissection. IVUS or OCT imaging can be used to confirm guidewire placement in the true lumen, evaluate the length of dissection and vessel size, assist in the correct positioning the first stent to deliver and assess stent apposition, and to seal the dissection at the end of the intervention. The clinical success rate of stenting in patients with SCAD is over 90%. Single vessel dissections of major coronary arteries are usually managed with PCI with stenting, while left main dissection, multivessel involvement, or failed PCI procedures are treated by CABG. In cases of spontaneous dissections involving a long coronary artery segment, CABG can be very challenging. The vessel wall may be fragile due to the underlying condition predisposing to dissection.

Prognosis

In-hospital mortality of SCAD is relatively low, with a mean rate of around 3 %(19). Patients who survive the acute phase have a good long term prognosis, with a very low recurrence rate of SCAD or acute coronary syndrome, and a 95% 2 year survival rate. Although outcome is in general good, the overall mortality in reported cases of the peripartum group is 38 %(20).

Conclusion

Incidence of SCAD is very low. SCAD occurs most often in young women (age <40 years). It occurs frequently in the peripartum period. Left anterior descending coronary artery is the most frequently involved vessel. Multivessel dissection is present in 20% of the cases. SCAD results from haematoma formation in the outer third of the vessel

wall and an intimal tear is only seldom observed. Early coronary angiography remains essential in the diagnosis of SCAD. Additional IVUS and OCT imaging provides very detailed information on the location and extent of the dissection. Patients with ongoing myocardial ischaemia must be treated with early revascularization (PCI or CABG).Patients without flow limiting dissection should be treated conservatively as spontaneous healing is possible. CT coronary angiography is useful in the follow-up of conservatively managed patients.

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Abstracts

Presented in International Conference (2-3 November 2012)

All the abstracts are printed as submitted by authors

Study on Primary Percutaneous Coronary Intervention (PPCI) in Patient with Acute ST elevation Myocardial Infarction: In-Hospital, 30-days and long term Survival Outcome A single centre study in Shahid Gangalal National Heart Centre (SGNHC), Kathmandu Nepal.

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Background

To determine the outcomes of primary percutaneous coronary intervention (PPCI) in Shahid Gangalal National Heart centre.

Methods

Medical records of 212 successful PPCI in our centre between March 2007 to March 2012 were retrospectively reviewed. The primary end point was in hospital mortality and secondary end points were 30 day mortality, and long term mortality.

Results

In coronary angiogram, single vessel disease in 168 (79%) was the common finding. Based on the emergency ECG, inferior wall MI 64 (30%) was the common cause for PPCI, followed by Anterior wall MI 60 (28%). In most patient 103(48.7%) Right Coronary Artery (RCA) was the culprit vessel. Five patient out of 184 patients without cardiogenic shock died (2.7%). Among 28 patient presented in cardiogenic shock 11 died (39.2%). Over all in hospital mortality was 16 (7.5%). Among the 16 death 8 were male and 8 female, 9 were less than 75years old, 7 more than 75 years old. Among those who died 11 had SVD and 5 have DVD. Among the mortality 8 patients underwent PPCI in RCA, 6 in LAD and 2 in LCX.

196 patients were discharged after PPCI, among them 21 patient could not be contacted. Among 175 contacted patients through phone and OPD record there was a single mortality within 30 days after discharge. There was no mortality within three months of discharge. There were 4 deaths in one year of follow- up.

Conclusions

Our findings suggest that favourable outcomes, matching the international data can be achieved in our patients with primary PCI in the management of life threatening illness STEMI. Primary PCI as a preferred method of reperfusion strategy needs to be practiced more often in our part of the world

The association between endothelial dysfunction and metabolic syndrome in Nepalese cohorts with coronary risk factors

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Background

Metabolic syndrome has been regarded as a coronary heart disease risk factor. But its contribution to CHD in the presence of other major coronary heart disease risk factors is largely unknown. Endothelial dysfunction is thought to be the preclinical vascular changes in the pathogenesis of atherosclerosis and coronary heart disease.

Objective

This study was designed to assess the endothelial function in subjects with metabolic syndrome in a cohort of subjects with coronary heart disease risk factors.

Methods

The study was conducted in a tertiary referral centre and the cohort consisted of 100 subjects with at least one out of six major coronary heart disease risk factors. Metabolic syndrome was defined using the revised Adult Treatment Panel III criteria modified for Asian subjects. Brachial artery flow-mediated dilation was measured using high-resolution ultrasound. Endothelial dysfunction was defined as flow-mediated dilation < 7.35% (lower 3rd quartiles).

Results

Out of 100 subjects with coronary heart disease risk factors (mean age 46.75 ± 9.95 years, mean number of coronary heart disease risk factors 2.81 ± 1.17), 81% subjects met the metabolic syndrome criteria. Metabolic syndrome was evident in 79.1% and 84.85% subjects with normal and abnormal endothelial response respectively. In addition, 34.57% and 26.32% subjects with and without metabolic syndrome had endothelial dysfunction respectively (p = 0.68). Metabolic syndrome and obesity including abdominal obesity were not associated with endothelial dysfunction even in univariate analysis (p value of 0.71 and 0.68 respectively). Hypertension was the only coronary heart disease risk factor associated with endothelial dysfunction in a multivariate model.

Conclusions

In this cohort of subjects with major coronary heart disease risk factors, the metabolic syndrome was not associated with endothelial dysfunction. Hypertension was the only endothelial dysfunction risk factor associated with endothelial dysfunction in multivariate model.

Keywords coronary risk factors, endothelial dysfunction, metabolic syndrome

Prevalence of metabolic syndrome in Dhulikhel Municipality population

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Background

It is rare to see type II diabetes, dyslipidemia, obesity or hypertension in isolation. The metabolic syndrome is a cluster of the most dangerous heart attack risk factors: diabetes and pre-diabetes, abdominal obesity, high cholesterol and high blood pressure. Metabolic syndrome is becoming increasingly common and it is estimated that a quarter of the world's adults have metabolic syndrome. It is important to manage metabolic syndrome at an early stage, reducing the risk of developing type II diabetes and cardiovascular disease. Management of the metabolic syndrome involves patient-education and intervention at various levels but major issue to be commenced is to determine the prevalence of metabolic syndrome in residing population.

Objectives

To determine the prevalence of metabolic syndrome and its components in population of the municipality of Dhulikhel, Kavrepalanchowk.

Methods

The current study was a population-based study; randomly selected adults >30 years were studied using stratified sampling. Target study sample was 425 with population proportionate distribution (men 185, women 280). Evaluation of anthropometric variables, blood pressure, fasting blood glucose and lipids was performed. Metabolic syndrome was defined according to NCEP ATP III panel and IDF guidelines. Statistical analysis was performed using SPSS version 16.0 and Excel 2007.The results were expressed as Mean ± SD and percentage.

Results

NCEP-ATPIII and IDF definitions had characterized metabolic syndrome in 30.1 % and 27.3 % of study population, respectively, bolding glycemia, triacylglecerol and hypertension.MS prevalence was higher according to NCEP-ATPIII panel guidelines.

Conclusions

There is a high prevalence of metabolic syndrome in Dhulikhel municipality population. The clinical relevance of the metabolic syndrome is related to its role in the development of cardiovascular disease and risk of type II diabetes so management of the metabolic syndrome and intervention at various levels is needed. Conversely, treatment and consequent improvement of metabolic syndrome can result in better outcomes in virtually metabolic syndrome and all of the related conditions.

Keywords CVD, Insulin resistance, Metabolic Syndrome, Obesity, Prevalence

Clinical profile of patients with HF with Reduced EF presenting to CMS-TH, A tertiary care hospital in Central Nepal.

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Background

Purpose of this study was to evaluate the common clinical presentation, associated condition, common clinical findings and common laboratory finding in HF patients with reduced ejection fraction. Study included patients with LVEF 45% and less for evaluation.

Methods:

48 patients with heart failure with reduced ejection fraction presenting to CMS-TH were evaluated for history clinical and other investigations including ECG, Chest X-ray and Echocardiography.

Result:

Out of study population 32 (66.7%) were male and 16 (33.3%) females. Average age was 66.82 years with maximum 87 and minimum 28 years. Shortness of breath 44 (91.67%) was the commonest symptom followed by chest discomfort 16 (33.34%) and limb swelling 8 (16.67%). 58.34% were smokers, 25% were known hypertensive, 8% were diabetic and 41.6% were alcohol consumer. Clinical findings included average SBP of 120.4 mmHg and DBP 77.5 mmHg, JVP was raised in 29%, average BMI was 21.5 kg/m2 and W/H ratio 0.86, apex displaced down in 75% cases, S3 present in 75% cases. PSM at apex was commonest murmur 91.6% and basal crackles in 58.34%. AF was present in 20%, average CTR was 0.68 and on Echocardiography average LVIDd 69.6mm, LVEF 34%, MR present in 100% cases. Average Hb was 11, creatinine deranged in 16.7%. Aspirin was used in 87.5% cases, BB (79.175), ACE-I (91.7%), Loop diuretic (91.7%), aldosterone antagonist (91.7%) and PPI (83.4%).

Conclusion:

In our study HF with reduced EF was more common in males (2:1), commonest symptom was SOB, and commonly associated disease was HTN. Most cases were normotensive at presentation. Common examination findings were down and out apex and S3 along with PSM at apex and MR was invariably present in all cases. Dilated LA and LV was common.Most cases received aspirin, BB, ACE-I, Loop diuretic and aldosterone antagonist and PPI was commonly prescribed.

Preventing renal and cardiovascular risk by renal function assessment: insights from a crosssectional study in low-income countries and the us

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Background

Chronic kidney disease (CKD) has emerged as one of the strongest cardiovascular (CV) risk factors. In the general population, reduction of e-GFR is associated with an independent risk of CV morbidity and mortality. Importantly, albuminuria reduction through ACE inhibitor or ARB therapy is associated with a slower renal disease progression and decreased CV mortality and morbidity. Thus, since measurement of renal function and albuminuria is easy and relatively inexpensive, kidney-targeted detection and prevention programs seem to offer a valuable opportunity to establish early prevention strategies that go beyond traditional cardio-protective approaches.

Objective

The study was undertaken to assess the prevalence of microalbuminuria, kidney dysfunction and cardiovascular risk assessment in low-income countries and in the US.

Methods

This is a cross-sectional study of screening programs in five countries, namely Nepal, Bolivia, US (National Health and Nutrition Examination Survey [NHANES] 2005-2008) Bangladesh, and Georgia.

The Participants general population in Nepal (n=20,811), Bolivia (n=3,436), and in the US (n=4,299) and high-risk subjects in Bangladesh (n=1,518) and Georgia (n=1,549).

Estimated glomerular filtration rate (eGFR) <60ml/min/1.73m2 and microalbuminuria (defined as urinary ACR values of 30- 300 mg/g) were the main outcome measures. The cardiovascular (CV) risk was evaluated on the basis of demographic, clinical, and blood data and the The likelihood of a serious CV outcome (death, myocardial infarction, stroke, heart failure or coronary re-vascularisation) during the next 10 years was estimated by using WHO charts for each studied country (available at http://www.ish-world.com/Documents/colour_charts_24_Aug_07.pdf)

Results

The prevalence of eGFR <60ml/min/1.73m2 was 19.0%, 3.2%, and 7.0% in Nepal, Bolivia, and US, respectively. In Nepal, 7.0% of subjects were micro-albuminuric compared to 8.6% in the US. The prevalence of participants with predicted 10-year CV disease risk ≥10% was 16.9%, 9.4%, and 17.0% in Nepal, Bolivia, and in the US, respectively. Predicted 10-year CV disease risk ≥10% was 25.4% and 25.0% in Bangladesh and Georgia, respectively.

Conclusions

Renal abnormalities are common amongst low-income countries and in the US. Prevention programs, particularly focused on those with renal abnormalities, should be established worldwide to prevent CV disease and progression to end stage renal disease.

Risk Factors for Cardiovascular Disease among School Children in Eastern Nepal

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Background:

The burden of non-communicable diseases (NCDs) is escalating rapidly and is a major public health challenge for developing countries. NCDs are largely attributed to unhealthy life style such as unhealthy dietary habits, physical inactivity, overweight/obesity and smoking. A potential emerging public health issue may be the increasing incidence of childhood obesity and related disorder in developing countries and the resulting socioeconomic and public health burden faced by these countries in the near future.

Nepal, one of the least developed countries of the world which is still fighting to eradicate hygiene related and infectious diseases can not afford the increasing burden of NCD's. Thus it is important to identify unhealthy lifestyles and behaviors early to promote healthy changes during childhood and adolescence period. However, there is no published data, which provides information about the extent of cardiovascular disease (CVD) risk factors like the prevalence of childhood hypertension, obesity, smoking, life style factors in school going children of Nepal. Moreover, the presence of albuminuria, an emerging independent risk for CVD may add to the understanding of future occurrence of CVD. The study was undertaken to assess the frequencies of various risk factors for cardiovascular disease in school children. This may help to design and implement interventions to modify unhealthy lifestyles and risk factors for cardiovascular disease.

Methods:

Initially, the databases for the school were obtained from the municipality of Dharan. School having standard of 7 to 9 was considered eligible for the study. There were 50 eligible schools. A request was sent to all the school by principal investigator to participate in the survey. One of the schools refused to participate. A cross-sectional survey was conducted in 49 schools using predefined structured questionnaires. Children, studying in secondary school (class 7th to 9th), in both private and government schools were included.

Informed written consent was sought from the guardian and/or schoolteacher. At the beginning of the survey students were informed regarding the aims and rationale of the study and were assured about the confidentiality of the information. All the data were collected and measurements done by trained health personnel, by administrating a structured questionnaire to students. The questionnaire comprised of variables of various risk factors for cardiovascular disease, which included dietary habits, physical activity, smoking, concept of body image?, disease status, knowledge about healthy and unhealthy food etc.

Height, weight, waist hip ratio and blood pressure were measured in all the children. Children having either hypertension or overweight/obesity reevaluated for confirmation of the hypertension. They were also screened for the proteinuria and albuminuria by spot urine albumin creatinine ratio.

Results:

A total of 6428 students were evaluated with the questionnaire. A total of 528 students were found to have overweight/obesity and/or hypertension. 512 students participated in re-evaluation for the confirmation of previous finding by the physician. The frequencies of various risk factors for cardiovascular disease recorded were; physical inactivity in 58.43% (N=295), unhealthy dietary habits 42.14% (n=210), smoking as disclosed by the student 8.6% (N=44). Out of 503 responders 29.22% (N=147) thought that their food habit is not healthy. History of smoking by household member was reported in 14.25% (N=73) by the children. Overweight and/or obesity were recorded in 65.82% (N=337) and 17% (N=87) respectively. Hypertensive as per JNC criteria was recorded in 16.79% (N=86). Obesity and hypertension in combination was recorded only in 1 student. Seven students also had albuminuria.

Conclusion:

This study indicates that significant proportion of school children have modifiable risk factors for cardiovascular disease such as physical inactivity, unhealthy dietary habits, overweight/obesity, smoking and exposure to household smoking. We suggest, a comprehensive research, involving population-based samples and incorporating other childhood age groups and social class to unmask the burden of risk factors for the development of cardiovascular disease. This may help to compile evidence for a cost-effective intervention in accordance to our local scenario.

Rotablation for calcified lesion: Initial experience in a private set up in Nepal

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Background

Even in these advanced coronary intervention days, calcified lesions may pose major challenges. High pressure non-complaint balloons, as well as specially designed balloons with cutting blades have been designed for such lesions. However on many occasions, it is essential to modify the calcified plaque by rotablation for optimal deployment of the stent.

Methods

The initial ten cases of rotablation done at Norvic International Hospital are presented.

Results

Seven out of the ten patients were males. The age of the patients ranged from 54 to 81 years. Most of them had preserved LV ejection fraction. Five of them had diabetes. Rotablation was done in LAD in seven patients and in LCx in the other three. 6 f Guide was used in 7 and 7 f in three cases.The burr sizes were 1.5 and1.25 mm, and speeds were 1.60 to 1.90 lakh rotations per minute. In all cases, subsequent stent implantation was done. There was no case of coronary perforation, dissection, acute stent closure or death.The vessel size was 2.5 to 3.0 mm in 7 cases.All cases were done through femoral route except two who were done through radial route.

Conclusion

Rotablation has been proven to be an efficient tool for lesion preparation to facilitate dilatation and stent expansion, especially among complex calcified stenosis, which has become more important than ever to ensure effective and safe stent implantation. This technique is now available for the patients in Nepal and the initial results are satisfactory.

Clinical and angiographic outcomes of the first 200 cases of Primary PCI done at Norvic International Hospital, Kathmandu

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Background

Primary percutaneous coronary intervention is a life-saving interventional cardiology care provided at Norvic International Hospital since 2005. It is an established method of management of ST elevation myocardial infarction. Numerous studies has proved the superiority of Primary percutaneous coronary intervention over thrombolytic therapy.

The objective of this study was to analyze the clinical and angiographic outcomes of the first 200 primary percutaneous coronary interventions done in ST elevation myocardial infarction patients in this hospital.

Methods

A retrospective analysis of the first 200 cases of primary percutaneous coronary interventions for ST elevation myocardial infarction, treated at Norvic International Hospital was done with SPSS version 17.0.

Results

Fifteen (7.5 %) of patients were under aged <41 years while 38(19%) were >70 years. One hundred and sixty one (80.5%) were males and 39 (19.5%) were females. Conventional coronary risk factors were present in the following proportions: hypertension (52.5%), diabetes (35.5%), smoking (32.5 %), dyslipidemia (24%), and positive family history (13%). Ejection fraction <40% was present in 25.1% of the patients. Fifty two patients had single vessel disease while 37 % and 12 % had double and triple vessel disease. In hospital mortality was 3% (6 deaths). 94.5% patients achieved TIMI III flow. Drug Eluting Stent and Bare Metal Stent were used in 72.1 and 26.3 percent patients respectively. Door to balloon time 30 min or below was 7%, 31-60 minutes 82%, and more than 60 minutes was 11%. Window period recorded in average was approx. 4 hours. Thrombosuction was done on 21.5% of cases.

Conclusion

We presented data on the successful completion of the first 200 cases done in a private setting of Nepal. Primary PCI is becoming a procedure of choice for treating STEMI in Nepal where the service is available. When done timely, most cases of STEMI can be salvaged.

Comparison of Outcomes in Elderly versus Non-elderly Primary PCI Patients at Norvic International Hospital, Kathmandu

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Background

Primary angioplasty is an established method of treating ST elevation myocardial infarction. Norvic International Hospital has been providing primary percutaneous coronary intervention service since 2005 to patients of all ages. Primary angioplasty in the elderly presents additional challenges.

This study was done to compare the clinical profile and outcomes in the elderly patients with the non-elderly patients who underwent primary percutaneous coronary intervention in this hospital.

Methods

A retrospective analysis of data of all the patients who underwent primary angioplasty in this hospital was done. We reviewed 224 consecutive patients treated with primary angioplasty for ST elevation myocardial infarction since 2005. Those who were > 65 years of age were defined as elderly while those aged ≤ 65 years were termed non elderly. Clinical characteristics, in-hospital outcomes of the elderly were compared with the non-elderly.

Results

Out of 224 cases of primary angioplasty, 62 (27.7%) were elderly and 162 (72.3%) were non elderly. Conventional coronary risk factors were present as follows in the elderly and non-elderly: hypertension (71% vs. 44.4%), dyslipidemia (22.6% vs. 21.6 %), smoking (40.3 % vs. 27.2 %), positive family history (9.7 % vs. 16.0 %) and diabetes mellitus (37.7% vs. 43.2 %). Number of coronary vessels involved was as follows: in the elderly patients 46.8, 41.9 and 11.3 percent had single, double and triple vessel disease; in the non-elderly group, the proportions were 54.9, 34.6 and 10.5 percent. In hospital deaths were 3 (4.8%) in the elderly group and 2 (1.2%) in non elderly group. There were no other major adverse cardiac events like cerebrovascular accident, major bleeding, or re-infarction during the hospital stay.

Conclusion

Even though there is slight increase in mortality among elderly, primary angioplasty results in our centre are quite acceptable when compared to the data from the international centers. Elderly patients have higher CAD risk factors. Although they carry extra risk during and after the procedure, when done carefully, it can give rewarding results, and should be encouraged.

Pattern of dyslipidemia in diabetes mellitus in tertiary hospital of Nepal

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Background

Dyslipidemia is a preventable major risk factor for coronary heart disease. Despite an increased risk of coronary heart disease in diabetes, little is known concerning awareness and adequacy of dyslipidemia treatment in this population. Patients with Diabetes Mellitus are at an increased risk for coronary heart disease. Factors that may enhance the risk include dyslipidemia, hypertension, and hyperglycemia. The south Asians are found to have unusually high tendency of developing Diabetes Mellitus type 2 and coronary heart disease. There has not been much study about the prevalence of dyslipidemia in Diabetes Mellitus in Nepal.

The objective of this study is to evaluate the pattern of dyslipidemia in patient with Diabetes Mellitus in tertiary care hospital over a period of 6 months (June 2010- Jan 2011).

Methods

This is a prospective, cross sectional, descriptive study of the patients with Diabetes Mellitus admitted in Medical units of TUTH and MCVTC. History was taken by preformed questionnaires and patients were clinically examined. A series of baseline investigations including fasting lipid profile were done. Patients were followed up till discharge.

Results

Total 120 diagnosed diabetes mellitus patient were enrolled in the study. Total serum cholesterol level was high in 33.3%, serum triglyceride was elevated in 18.3%, LDL cholesterol was raised in 21.7% and HDL cholesterol was low in 20%.

Majority of the study patients 69.2% were found to be in poor status of Glycemic control with HbA1c level more than 7 % and 30.8% were in good control with HbA1c level less than 7%. Among poor Glycemic control group, 84.4% had HbA1c level between 7-12% and 15.6% had HbA1c level >12%

Conclusion

Dyslipidemia, a major risk factor for CHD, remains largely undiagnosed and undertreated in high risk populations, especially in patients with Diabetes. Increased triglycerides and decreased HDL are the commonest pattern observed in diabetics. Treatment of dyslipidemia with various modalities early in the course of disease helps to prevent macrovascular complications.

Rheumatic Heart Disease: Rationale and Design of a Population-Based Study of Prevalence and Cardiovascular Outcomes among Schoolchildren

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Background:

Rheumatic heart disease remains a major contributor to morbidity and mortality in developing countries. The reported prevalence rates of rheumatic heart disease are highly variable and mainly attributable to differences in the sensitivity of either clinical screening to detect advanced heart disease or echocardiographic evaluation where disease is diagnosed earlier across a continuous spectrum. The clinical significance of diagnosis of subclinical rheumatic heart disease by echocardiographic screening and early implementation of secondary prevention has not been clearly established.

Methods:

A cross-sectional survey to determine the prevalence of rheumatic heart disease in children from private and public schools between the age of 5 and 15 years in urban and rural areas of Eastern Nepal using both cardiac auscultation and echocardiographic evaluation. Children with rheumatic heart disease were treated with secondary prevention and were enrolled in a prospective cohort study. We compared the prevalence rates by cardiac auscultation and echocardiography, determined risk factors associated with diagnosis and progression of rheumatic heart disease, investigated social and economic barriers for receiving adequate cardiac care and assessed clinical outcomes with regular medical surveillance as a function of stage of disease at the time of diagnosis. Prospective clinical studies investigating the impact of secondary prevention for subclinical rheumatic heart disease on long-term clinical outcome will be of central relevance for future health resource utilization in developing countries.

Results

A total of 12,000 schoolchildren were enrolled from 12 randomly selected public and private schools from urban and rural areas in Dharan. The three main inter-related objectives was pursued in three phases of the study. In the first phase using a cross sectional approach, the prevalence of clinical and subclinical rheumatic heart disease was investigated among a representative sample of schoolchildren from public and private schools in urban and rural areas in Southeast Nepal. In the second phase, using a cohort study approach among those children diagnosed at different stages of rheumatic heart disease, clinical outcomes with regular medical surveillance was assessed (a), and clinical and social risk factors associated with prognosis of the disease after receiving medical care at various stages of disease at diagnosis was determined (b). The third phase integrated the prevalence rates from phase 1 and the clinical outcomes from phase 2 in a mathematical model to assess the impact of screening and rheumatic heart disease treatment on quality of life and health resource utilization. Three types of study designs was employed in three phases: a cross-sectional study (part I), a longitudinal cohort study (part II) and an analysis of the impact of screening, secondary prevention and treatment on quality of life and health resource utilization (part III). The three parts was performed in sequential order over a period of 5 years.

Conclusion:

Rheumatic heart disease remains a major contributor to morbidity and mortality in developing countries. Echocardiographic screening allows diagnosis of rheumatic heart disease at an earlier stage across a continuous spectrum as compared with cardiac auscultation. The clinical significance of diagnosis of subclinical rheumatic heart disease by echocardiographic screening and early implementation of secondary prevention has not been clearly established.

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A preliminary evaluation of the impact of interventional cardiology program in eastern Nepal : an Initial experience

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Background

Ischemic heart disease and acute coronary syndrome continues to be the major cause of morbidity and mortality globally. We compared the in-hospital outcome of patients admitted for an acute coronary syndrome to a tertiary referral hospital in Eastern Nepal, before 2008 and after 2011 onwards the availability of an invasive cardiology program. The objective of the present study was to assess the outcomes of patients presenting with Acute Coronary Syndrome to B.P. Koirala Institute of Health Sciences a tertiary referral hospital; in eastern Nepal after the cardiac catheterization laboratory services commenced from January 2011 till present (September 2012) and to compare their in-hospital outcomes with those patients who presented with Acute Coronary Syndrome in 2008 when interventional procedures were not available at our centre.

Methods

A cross sectional descriptive study was conducted on consecutive patients presenting to BPKIHS with acute coronary syndrome from January 2011 to December 2011, January 2012 to September 2012 and compared to similar data collected from January to December 2008. All patients admitted to the 6-bed Coronary Care Unit and the medicine ward of the hospital with a clinical diagnosis of Acute Coronary Syndrome were included, and assigned to one of three groups: ST Segment Elevation Myocardial Infarction, Non ST Segment Elevation Myocardial Infarction and Unstable Angina. During the first period, all patients were treated medically and/or transferred to Kathmandu. During the second period, patients were either managed by an invasive procedure (coronary angiography with or without angioplasty) or were treated conservatively, depending on delays, clinical presentation and the patient's financial resources. We collected data regarding the modes of presentation of ACS, age, gender, treatment during hospital stay, need for invasive evaluation and intervention and in-hospital outcome.

Results

Referrals for ACS increased by more than 50%, from 153 patients in 2008 to 231 in 2011. However, due to the absence of a general health insurance in Nepal, and the resulting financial constraints, only 61 patients (26%) of the patients agreed to undergo PCI . One hundred and six patients (46%) presented with ST-segment elevation myocardial infarction (STEMI). In 2008, 20 patients (34%) presenting with STEMI were treated with thrombolysis using streptokinase, and 6 (4%) were referred for coronary angiography to Kathmandu, in view of possible revascularisation. In 2011, 4 STEMI patients (4%) received streptokinase, 6 (3%) were referred to Kathmandu, and 61 (58%) were treated with primary PCI (Thombolysis: 13% in 2008 vs. 2% in 2011; p<0.001) (Referal: 4% in 2008 versus 3% in 2011, p=0.55). For the latter, bare-metal stents were used in 48% and drug-eluting stents in 52% of patients. Multiple stents were used in 10 patients (16%). In-hospital mortality rate for all patients with STEMI decreased from 17% in 2008 to 9 % in 2011, while the in-hospital mortality of the overall patient population with ACS decreased from 14% in 2008 to 8% in 2011 (p=0.06).

Conclusions

Considering the population of Eastern Nepal of eight million, it is fair to assume that the 231 (in 2011) patients presenting to the only tertiary care hospital represent only the very tip of an iceberg, and this implies an important selection bias of the reported data, with an over-representation of the educated, middle-class urban-dwelling population. However, this preliminary analysis highlights two main findings associated with the introduction of invasive and interventional techniques: The absolute number of patients admitted with acute coronary syndrome increased (+ 51% for 2008 vs. 2011), and, even if a full assessment of baseline characteristics is lacking, the in-hospital mortality rate tends to decrease (14% in 2008 vs. 8% in 2011; p=0.06). Several issues will have to be addressed in the future. Affordability of percutaneous coronary intervention balancing financial inequalities should be improved, public awareness should be further increased, transportation time shortened and access to primary PCI facilitated.

"An 80-year-old female Ebstein's anomaly patient with a history of psychiatric illness in her male offsprings"

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Case abstract

An 80-year-old female presented to Kaski Sewa Hospital, Pokhara, Nepal on October 16, 2012 with palpitation and dyspnea of New York Heart Association functional class III, and the investigations revealed that the patient had Ebstein's anomaly with concomitant atrial fibrillation with fast ventricular rate. This is probably the eldest surviving patient of Ebstein's anomaly presenting for the first time with cardiac symptoms at the age of 80 years. The case is also unique in that her sons were suffering from the psychiatric illness, but she was not suffering from any significant psychiatric illness. Among her four sons, the first son was of 52 years, who developed recurrent depressive disorder at the age of 38 years; the second son was of 48 years, who developed schizoaffective disorder at the age of 38 years; the third son committed suicide at the age of 45 years, which could be due to major depressive episode and the fourth son was of 36 years of age, not showing any major psychiatric illness so far. However, her two daughters did not have any psychiatric illness. There are case reports of occurrence of Ebstein's anomaly in offsprings following consumption of lithium during pregnancy by mother. However, no cases have been reported where children of patient with Ebstein's anomaly have suffered from psychiatric illness. This case is, therefore, notable on two counts: firstly, the late age of presentation of cardiac problem and secondly, the occurrence of psychiatric illness in the male offsprings of the patient.

Keywords: Ebstein's anomaly, psychiatric illness, cardiac symptoms

Pumonary Thromboendarterectomy for Severe Pulmonary Hypertension due to Chronic Pulmonary Emboli.

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Case abstract

Pulmonary artery hypertension due to chronic pulmonary embolism is a grave prognostic marker much worse than that with Eisenmenger's syndrome. The condition is said to be common but underdiagnosed even in developed world. Once the mean pulmonary pressure in patients with the disease reaches 50 mmHg or more, the 3 year mortality rate approaches 90%. Pulmonary thromboendarterectomy provides immediate and permanent relief of pulmonary hypertension associated with sequelae of unresolved pulmonary thromboembolic disease.

36 years old male presented with shortness of breath, NYHA III with one episode of syncope. CT angiography and echo revealed chronic pulmonary emboli with severe pulmonary hypertension. He underwent pulmonary thromoboendarterectomy on February 10, 2012 under deep hypothermic circulatory arrest. Post op course was unremarkable except for a minor reperfusion injury of right lung. He was discharged from hospital on 8th post day. Now he is in NYHA class 1, doing his regular job without having any symptom.

We believe this is the only pulmonary thromboendarterectomy done so far in the country.

SVG- PCI in Acute MI

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Case abstract

Primary percutaneous coronary intervention for Acute Myocardial Infarction is now an established method of treatment and has great success rates in expert hands. Percutaneous coronary intervention of venous grafts especially in the setting of acute thrombotic occlusion may not have great results. The major factor is distal embolization of atherothrombotic debris resulting in no-reflow and periprocedural Myocardial Infarction. Risk can be estimated by angiographic estimates of plaque volume, extent of saphenous venous graft degeneration and by the presence of thrombus. A pooled analysis of five randomized clinical trials demonstrated no reduction in risk with glycoprotein (GP) IIb/IIIa inhibitors administered during saphenous venous graft percutaneous coronary intervention. Embolic protection devices are now recommended to improve the results of saphenous venous graft percutaneous coronary intervention.

The American College of Cardiology/American Heart Association/Society for Cardiovascular Angiography and Interventions 2005 guideline update for percutaneous coronary intervention gives a Class Ib recommendation for the use of Embolic protection devices during saphenous venous graft percutaneous coronary intervention when technically feasible. Likewise, the European Society of Cardiology Guidelines for PCI gives Embolic protection devices a class Ia recommendation for saphenous venous graft percutaneous coronary intervention. In absence of availability to Embolic protection devices, it may be challenging to handle an acutely closed saphenous venous graft.

Here, a case is described where the patient had undergone coronary artery bypass graft 18 years ago and presented with non ST elevation myocardial infarction. The coronary angiogram revealed a thrombotic occlusion of saphenous venous graft to obtuse marginal branch. DPD was not available.

After crossing the lesion with an All Star guide wire, thrombosuction was made with 6f Medtronics Export aspiration catheter. The lesion was pre-treated with intra coronary nitroprusside and then stented with Resolute 2.75 x 18 mm coronary stent. TIMI 3 flow was achieved and patient was discharged in a stable condition.

In absence of a DPD, a good thrombus aspiration and pre treatment of coronary vasodilators may be of use in acute management of saphenous venous graft closure.

Scorpion sting induced reverse Tako Tsubo Cardiomyopathy

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Case abstract

Myocarditis due to scorpion bite is a rare etiology. We report a 16 year girl who presented to the emergency department seven hours after being stung by a scorpion in right ring finger.

On presentation, patient had tingling sensation at that site, breathlessness, frothy sputum and vomiting, since two hours of sting. On examination, she was pale, disoriented, perspiring and dyspnoeic. Vitals were: blood pressure 70/40 mmHg, respiratory rate 56/min, pulse rate 140/min, regular, temperature 37.2° C and oxygen saturation 72% without O2 and 85% with O2. Respiratory system examination disclosed bilateral basal coarse crepitations. Cardiovascular system examination revealed S3 gallop at the apex. Examination of right ring finger revealed mild edema and erythema. Laboratory investigations showed: sodium 139 mEq/L, potassium 3.5 mEq/L, urine analysis normal, hemoglobin 11.5 g/dl, WBC 17600 /mm3, polymorphs 74%, platelets 212000/mm3, blood sugar 6.7 μmol/L, urea 9.1 μmol/L, creatinine 117 μmol/L, serum calcium 1.4 μmol/L, albumin 28.5 g/L, SGOT 87 IU/L, SGPT 38 IU/L, CPK-total 540 IU/L, CPK-MB 53 IU/L, Troponin-I Negative. Electrocardiogram on second day showed T-wave inversion in Lead I, aVL, V1-5. Chest radiograph showed bat-wing appearance suggestive of acute pulmonary edema. Echocardiography showed left ventricular ejection fraction of 25% with mid-ventricular hypokinesia with preserved basal and apical segments. Patient was treated with oxygen, intravenous frusemide, enalapril, oral potassium supplements, dobutamine and nitroglycerine. On fourth day of admission, chest radiograph showed improvement in air space opacification. Patient continued to improve and was discharged on tenth day of admission in stable condition. Echocardiography before discharge showed ejection fraction of 60% and chest radiograph showed marked improvement of lung edema.

Scorpion bite induced myocarditis has been occasionally reported in literature. But reverse Tako Tsubo cardiomyopathy due to scorpion bite is a rare manifestation.

An eye opener for the cardiologist ??

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Case abstract

A 35 years old male presented with multiple episodes of presyncope for five years. It wasn't associated with loss of consciousness, palpitation, vomiting or loss of balance but was aggravated during exertion. Loss of hair and puffiness of face is present for one year. Persistent sleepiness and loss of energy is also present.

Patient was diagnosed hypertensive 5 years back and propranolol 20mg was started. The patient developed dizziness on the very next day. He was diagnosed drug induced bradycardia (heart rate 32 per minute) where patient was treated with injection atropine and was discharged with tablet isoprenaline 10mg thrice daily. However, the dizziness did not improve. The patient visited many hospitals and took isoprenaline for 5 years without any improvement.

Patient underwent Holter monitoring which showed average heart rate of 52/min, 887 pauses (longest 4.7 sec). Similarly Electrocardiogram showed sinus bradycardia, QT prolongation (0.61sec), frequent pauses (>1.4 sec).

Finally he was advised permanent pacemaker insertion and was referred to our hospital. When he came to our out patient department, in view of hoarse voice and puffy voice we suspected hypothyroidism. Deep tendon reflexes showed delayed relaxation of ankle reflex.

 Thyroid function test showed: FT3: 49ng/dl (normal 80-200), FT4: 1.3microgram/dl (normal 5.1-14.1), TSH>100microIU/ml (normal 0.27-4.2)

Patient was started levothyroxine therapy and symptoms gradually subsided. After 2 months, ECG showed heart rate= 66/min, QT interval= 0.4sec with no pauses.

Holter showed, average heart rate of 75/min, 15 pauses longest measuring 3.8 sec.

FT3= 2.99pg/ml (normal 2-4.4), FT4= 0.87 ng/dl (normal 0.93-1.7) ,TSH= 37.8 microIU/ml .

Thus, this case illustrates the importance of thyroid hormone work up in cases with bradycardia induced presyncopal attack with ECG changes (frequent pauses with QT prolongation).

A rare case of Systemic Lupus Erythematosus presenting as Cardiac Tamponade

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Skin and musculoskeletal system involvement are the most common presentations in systemic lupus erythematosus(SLE). Cardiac involvement occurs in one half of cases in SLE. Pericarditis with pericardial effusion is the most common cardiac manifestations. However, pericardial effusion causing cardiac tamponade are uncommon in patients with SLE. This paper reports a case of SLE presenting for the first time in cardiac tamponade, which is a rare manifestation of SLE.

A 20 years lady, a diagnosed case of Rheumatic Heart Disease (RHD) with moderate mitral stenosis, in her third postpartum month was referred to us with 2 months history of gradual swelling of whole body and shortness of breath on exertion (NYHA class III). Physical examination revealed a pulse rate of 140/min and blood pressure of 80/60 mm of Hg. Other significant findings were pulsus parodoxus and raised JVP with rapid X descent and absent Y descent. Cardiovascular examination revealed cardiomegaly with muffled heart sounds. Her hemoglobin was low with normal urea and creatinine. Her chest X-Ray showed enlarged cardiac silhouette with bilateral minimal pleural effusion. Electrocardiogram showed sinus tachycardia with low voltage in limb leads. Echocardiography showed massive pericardial effusion with evidence of cardiac tamponade. Immediate pericardiocentesis was done and about 400 ml of fluid was drained via pigtail catheter.

She was empirically started on anti tubercular medications with steroids but she did not improve. She developed an episode of generalized tonic clonic seizure. Her repeat urine examination showed 2+ protein. ANA and anti ds DNA were strongly positive. So, diagnosis of SLE with pericarditis, lupus nephritis and cerebritis was made. Anti Tubercular medication was stopped and was treated with IV methyl prednisolone 500 mg once daily for 3 days, and later on put on maintenance oral dose. She gradually improved and was discharged with marked improvement of symptoms.

Our case presented with some uncommon features of SLE. Skin and joint involvement, which are the most common features of SLE, was never present in our case. She had three relatively uncommon features of SLE in form of involvement of heart, kidney and central nervous system at the initial presentation. To best of our knowledge, no such case has been reported in literature which had involvement of three major organs without skin and joint involvement and presenting as cardiac tamponade at first time.

Cardiac tamponade is an uncommon presentation of SLE. Diagnosis of SLE is sometimes difficult in absence of typical manifestation like skin and joint involvement. Presentation in cardiac tamponade in absence of skin and joint involvement is a rare presentation of SLE.

Nepalese Heart Journal
Authors Guidelines

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NHJ stands as a forum from which the researches conducted in various disciplines in Cardiovascular Medicine, the reviews done, novel and unique cases which we encounter during our professional career can be made available to our readers.

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ill ills = illustrator(s)	para paras = paragraph(s)
rev = revised	

Guidelines on individual article types

Editorial

This is written in each issue by the editor or members of editorial board and is not open for external authors unless invited.

Original Articles

We publish all types of research articles, i.e. descriptive, analytical, and experimental. However, we believe that some descriptive studies fall under audit section more than as an original research article. Such articles which do not contribute substantially to existing knowledge or to new concepts, will be placed under AUDIT section of the journal.

Original Articles should have following headings in its manuscript:

- Title
- Abstract
- Key Words
- Introduction
- Methods
- Results
- Discussion
- Conclusion
- Limitation
- Acknowledgement
- References

Original Article

Title

- Complete title of the article

- Provide also Running title – not more than 50 characters

- Be short, accurate, and unambiguous giving your paper a distinct personality

- Begin with the subject of the study

- Avoid excessive adjectives and noun strings

Abstracts

The abstract should contain the essence of the whole paper and should stand-alone. Be clear and concise and avoid unnecessary detail.

- Word limits – 250 words

- No abbreviation to be used in abstract

- Structured abstract - into following sub groups

- Background

- Objectives

- Methods

- Results

- Conclusion

Key Words

- Key Words – 3-7 words, arranged in alphabetical order

- Use Key Words from MeSH index –

    website http://www.ncbi.nlm.nih.gov/mesh

Introduction

- Word limit – 250 words

- Introductions should be short and arresting and tell the reader why you undertook the study

- Divide the Introduction into three parts

a. The first paragraph should be a very short summary of the exiting knowledge of your research area.

b. This should lead directly into the second paragraph that summarizes what other people have done in this field, what limitations have been encountered with work to date, and what questions still need to be answered.

c. This, in turn, will lead to the last paragraph, which should clearly state what you did and why.

- Do not write conclusion in this section

Methods

Basically, it should include three questions: How was the study designed? How was the study carried out? and How was the data analysed?

Mention following, in order of their appearance, and writing in past tense or passive verb

I. Study type and study design

II. Place and duration of study

III. Sample size and Sampling method

IV. Methods of data collection

V. Ethical Approval and Patient consent

VI. Inclusion and exclusion criteria

VII. Protocols followed (if any)

VIII. Statistical analysis and software used

You should give precise details of the questionnaires you used and how they were developed, validated, and tested for repeatability. If NHJ questions, you should be able to provide the questionnaire.

When the sample size is smaller than 40, the results are rarely believable, the summary estimates lack of precision, standard statistical methods may be inappropriate, and the generalizability of the results will be questionable. It is always important to include details of your sample size calculations.

For comparison. You must also describe the methods of randomization, allocation concealment and blinding of the research staff and the participants to study group allocation. You must also describe any procedures that you used to maximize or measure compliance with the interventions. If a drug is being tested, then the generic name, the manufacturer, the doses used and any other information should be included.

Results

You should use an interesting sequence of text, tables, and figures to answer the study questions and to tell the story without diversions. Remember that results and data are not the same thing. You do not need to repeat numbers in the text that are already presented in a table or a figure.

- It is essential that you are consistent in the use of units in your reporting so that readers can make valid comparisons between and within groups. NHJ require you to use Système Internationale (SI) units

- Clearly present relevant data, and avoid data redundancy

- Only significant results must be shown under this heading

- Use a mixture of text, tables, and figures

- Avoid using percentages unless the group have more than 100 subjects

- When condensing results give the number of subjects, the range of results, the central tendency (mean± SD), and the spread (confidence interval for the mean)

- If you have done an analysis of variance give the estimates with their degrees of freedom and p values

- Prepare tables and figures according to the instructions mentioned above

- Tables and illustrations/ graphs/ charts should not represent the same results. Use the space below the legend to show some important findings.

- Write all your result text under one section referring to appropriate legends.

Template for Result, in order of their appearance

I.   Describe study sample. Who did you study?

II.   Univariate analyses - How many participants had what?

III.   Bivariate analyses - What is the relation between the outcome and explanatory variables?

IV.   Multivariate analyses - What is the result when the confounders and effect modifiers have been taken into account?

Discussion

- Discuss major findings. It should not merely be a repetition of results section. Only duplicating data from results section into this heading is NOT allowed

- Avoid unnecessary explanation of someone else work unless it is very relevant to the study. Other studies should be quoted in relation to the findings of the present study.

- Provide and discuss with the literatures   to support the study

- Mention about

    a. Limitations of your study

    b. Confounding factors

    c. Possible implications which are not

       mentioned in the abstract

An otherwise very good manuscript but with poor discussion may be rejected for the same reason

Conclusion

Template for Conclusion, in order of their appearance

I.   What did this study show? Address the aims stated in the Introduction

II.   Strengths and weaknesses of methods

III.   Discuss how the results support the current literature or refute current knowledge

IV.   Future directions "So what?" and "where next?" Impact on current thinking or practice

Also make note of the following

V. Give recommendation from your study

Acknowledgement

Acknowledge any person or institute who have helped the study Make acknowledgement short and do not add praise or literature in this section

References

Abide by NHJ guideline – Vancouver citation method.

Not more than 40 references for Original Article

Legends

Table e.g. (Table 1) and Figure e.g. (Figure 3)

Put tables, charts, and figures at the end of the paper, after references

Case Report

Title

- Complete title of the article

- Provide also Running title – not more than 50 characters

- Be short, accurate, and unambiguous giving your paper a distinct outlook

- Begin with the subject of the study

- Avoid excessive adjectives and noun strings

Abstracts

The abstract should contain the essence of the whole paper and should stand-alone. Be clear and concise and avoid unnecessary detail.

- Word limits – 150 words

- No abbreviation to be used in abstract

- Non Structured abstract

Key Words

- Key Words – 3-7 words, arranged in alphabetical order

- Use Key Words from MeSH index –

  website http://www.ncbi.nlm.nih.gov/mesh

Introduction

- Word limit – 150 words

- Introduce the case in short and highlight the importance of presenting it as a case report in the journal

Case Report

- Reason for reporting this case

- Avoid waste words

- The report should detail: what happened to the patient, the time course of events, why the particular management was chosen

Discussion

Provide and discuss latest literatures about your case report

Mention about limitation of the reporting, if any Valid written expressed consent from patient/s must be taken prior to involving any person in case note manuscript. The identity of the patient must not be revealed by text or figures. If the figure/picture tends to reveal the identity of the individual, it is the responsibility of the author to have explained so to the patient before submitting the manuscript

Use the same guideline for Case Series Reporting

-- Acknowledgement, References and Legeds to be used as mentioned above

Audits

Audit section may have similar sections like an original research article, i.e. abstract, introduction, methods, results, discussion, acknowledgements, references. Here, we publish papers that tend to give an audit of case records in one or more healthcare setting(s). The findings of audit articles provide the readers with a profile, or composition of cases occurring in wards or departments of the facility only.

If some study is done on a large scale enough which contributes to scientific literature reflecting important findings or contribution related to the country or some large geographic area, can then be better placed in an original research/ study section rather than an audit.

The decision as to whether a supposed original research article belongs to original research article itself or is published under the section of audit finally relies on the editorial board.

Review articles

Review article must incorporate various aspects of the topic chosen, and should also incorporate latest researches and findings. It should not merely be a collection of quotes from textbooks or very old articles of journals that does not contribute anything new to the scientific literature base already available.

Ideal Contents of a review:

- What is the problem?

- Historical background

- Basic science

- Methodology

- Human studies

- Discussion

- Conclusions

- Recommendations

- The future

The ideal review should be topical, up to date, balanced, accurate, authoritative, quotable, provocative and a good read.

Letter to the Editor

Letter to the Editor will be accepted or edited and published at the Editor's discretion. The author must give a full reference of the article published in NHJ while writing the letter to which he is referring. While writing be succinct (approximately 325 words) and address one or two major subjects regarding the article. Letters that, in the Editor's view, require a response from the authors of the article will be held pending notification of the authors, who will have fifteen days to respond. On receipt of an

author's response, the letter and the author response will be published in the journal and will also be posted in the web. If we do not receive an author response within fifteen business days, the letter will be published with a note stating, "The author has been invited to respond and has not done so."

General instructions to authors

- The decision of the editor will be final for modification or rejection. However, the author may withdraw his/her manuscript prior to publication when given a chance by the editor (e.g. after modification).

- If the authorship of a paper is changed in any way after it has been reviewed, the Editor will require a letter, signed by all authors named on the original or on the revised submission, explicitly agreeing to the change.

- Additional prints/ republication/translation:

- As NHJ is an Open Access Journal and we post all the articles published in the web in PDF format, the author may print additional copies. However, for doing so the author has an obligation to inform NHJ. This will also help us in tracking reprinted articles. However, if the quantity of reprints required is more than 50 or in a commercial basis, prior written permission is required by the author from the Chief Editor of NHJ.

- For republication of the article in another journal, the author must seek prior permission from NHJ, clearly stating the purpose and request for permission to print again.

- For translation of the article and publication in another language (in another journal), the author must seek prior permission from NHJ along with the purpose and request for permission to print again. Both the above mentioned points require to be compliant with ICMJE guidelines for reprints and translation.

- The submitted manuscript should actually represent the scientific work done and the data should not be manipulated for whatsoever purpose.

- Any irregularities, misinformation, or manipulation of the data tending to skew the conclusion towards the side that does not represent the actual finding, if found, can result in the manuscript to be rejected or retracted (if already published). NHJ may proceed with legal actions if needed in appropriate cases.

- If authors of a published article subsequently become aware of a significant error in it, they should send a notifying letter to the editor of NHJ as soon as possible. If the mistake is judged significant enough to warrant a published correction, the correction will be made as an "erratum" if the fault is NHJ's; "correction" if the fault is the author's.

Colour online

We are usually able to substitute colour versions of illustrations in the online journal at no cost. Authors wishing to take advantage of this facility are asked to submit a high quality colour image file for producing it electronically during their initial submission.

NHJ reserves the right whether or not to accept colour work that is not submitted in the format described above.

Supplementary online material

Authors wishing to include additional material supporting a paper for which there is no space in the printed journal, may wish to have this made available online with the paper on the NHJ website. These supplementary materials must be submitted with the original manuscript and will be shown to the reviewers and the editors.

This allows papers to have greater depth, online enhancements, such as video clips and additional data sets, making them more useful to fellow specialists in the field who require detail, without distracting more general readers.

Authors should ensure that supplementary information is supplied in its FINAL format because it is not subedited and will appear online exactly as submitted. It cannot be altered, nor can new supplementary information be added, after the paper has been accepted for publication.

NHJ is willing to consider publishing supplements to regular issues. Supplement proposals may be made at the request of:

The journal editor, an editorial board member or a learned society may wish to organize a meeting, sponsorship may be sought and the proceedings published as a supplement.

The journal editor, editorial board member or learned society may wish to commission a supplement on a particular theme or topic. Again, sponsorship may be sought.

NHJ itself may have proposals for supplements where sponsorship may be necessary.

A sponsoring organization, often a pharmaceutical company or a charitable foundation, that wishes to arrange a meeting, the proceedings of which will be published as a supplement.

In all cases, it is vital that the journal's integrity, independence and academic reputation is not compromised in any way.

CHECKLIST

(Please make sure that you have addressed all the points mentioned in the checklist)

☐ **Cover letter -**

The Cover page should carry the title, a short running title, total words count on abstract, total word count of manuscript, information of any disclaimers or funding bodies and the corresponding author's full names, qualifications, affiliations, departments, email and addresses of institute affiliated (street, city, country)

☐ **Authorship Page -**

Authorship page should carry in sequence information on primary author, corresponding author, and other authors, with authors' full names, qualifications, affiliations, departments, email and addresses of institute affiliated (street, city, country)

☐ **NHJ Authorship/Declaration Form (Completely filled) -**

Declaration page must be scanned and sent with signature Corresponding Author, and Primary Author

☐ **Manuscript file -**

Manuscript File must include Manuscript Text, including Abstract, References, and Tables/Chart. Do not embed figure/Image on this file

☐ **Supporting File/s -**

Include individual Image/Picture files (jpeg, tiff) - with minimum 300dpi pixel count and 800x600 size.

☐ **Supplementary files, if necessary**

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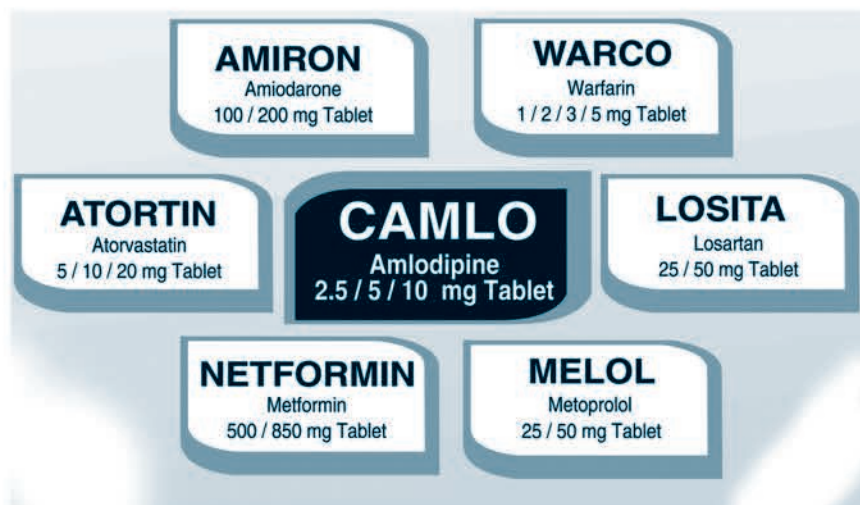2-3 November 2012

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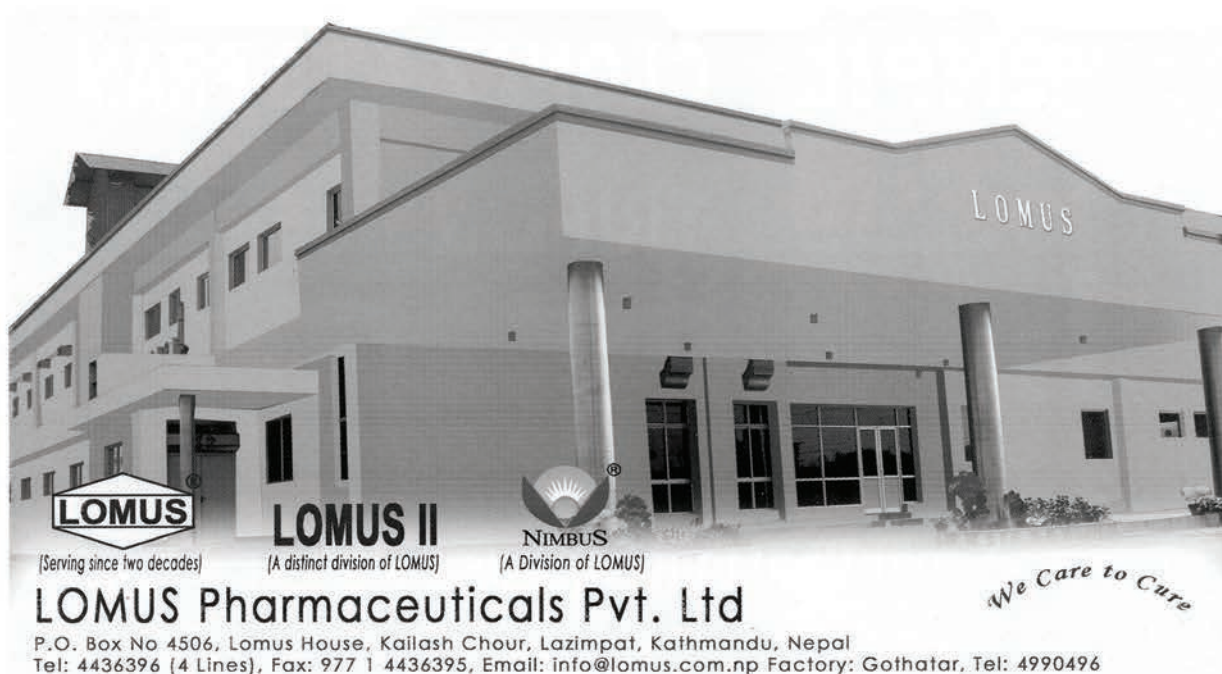
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