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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

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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

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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.

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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.

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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.

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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.