Coronary Angiographic Findings of Nepalese Patients with Critical Coronary Artery Disease: Which Vessels and How Severe?

**Corresponding Author:**
Dr. Bharat Rawat,
Managing Director and Senior Consultant Interventional Cardiologist, Norvic International Hospital, Thapathali, Kathmandu - Nepal

**Submitting Author:**
Dr. Abhinav Vaidya,
Research Consultant, Norvic International Hospital, Thapathali - Nepal

**Article ID:** WMC002864
**Article Type:** Research articles
**Submitted on:** 08-Jan-2012, 08:29:05 AM GMT  **Published on:** 09-Jan-2012, 03:48:35 PM GMT
**Article URL:** http://www.webmedcentral.com/article_view/2864
**Subject Categories:** CARDIOLOGY
**Keywords:** Percutaneous Transluminal Coronary Angioplasty, Coronary Artery Disease, Coronary Angiography, Nepal

**How to cite the article:** Gauchan N, Rawat B, Vaidya A, Rajbhandari S, Bhatta Y, Jaiswal J P. Coronary Angiographic Findings of Nepalese Patients with Critical Coronary Artery Disease: Which Vessels and How Severe? . WebmedCentral CARDIOLOGY 2012;3(1):WMC002864

**Copyright:** This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

**Source(s) of Funding:**
The study was not funded by any source.

**Competing Interests:**
None declared.
Coronary Angiographic Findings of Nepalese Patients with Critical Coronary Artery Disease: Which Vessels and How Severe?

Author(s): Gauchan N, Rawat B, Vaidya A, Rajbhandari S, Bhatta Y, Jaiswal J P

Abstract

Background: Coronary heart disease is a rising cause of adult death in Nepal. Diagnostic and interventional facilities such as coronary angiography and angioplasty have also collateral improvements in Nepal over the last decade. This study explores the most common coronary vessels involved in the Nepalese population based on the coronary angiographic findings.

Methods: This is a retrospective study of 852 Nepalese patients who underwent coronary angioplasty from early 2002 to 2010 end at Norvic International Hospital, Kathmandu.

Results: Single vessel disease was most common (69.06%) followed by double vessel disease (25.84%) and triple vessel disease (5.10%). Left Anterior Descending artery was most frequently affected (56.0%) followed by Left Circumflex Artery (34.2%) and Right Common Artery (31.4%). Left Main coronary artery was found to be severely stenosed in 0.4% cases.

Conclusion: The study has shown that the most Nepalese patients presented with single vessel disease with Left anterior descending as the most frequent culprit artery.

Introduction

Cardiovascular disease is the most common cause of Nepalese adults' death among which coronary artery disease (CAD) is by far the most frequent pathology [1]. It is estimated that about 5% of the adult population in the capital Kathmandu have severe CAD and the disease is increasing at an alarming rate [2]. A population-based prevalence study of coronary heart disease in Eastern Nepal has also shown a high prevalence of CAD that is comparable to the urban settings of North India [3]. Along with the rise in CAD and its risk factors, the last decade has also witnessed a rise in the diagnostic facilities and treatment modalities in the country. Coronary Angiography (CAG) began in Nepal at the turn of the millennium while Percutaneous Transluminal Coronary Angioplasty (PTCA) began a couple of years later in January 2002 at Norvic International Hospital.

The first PTCA was performed by Dr. Andreas Gruentzig on an awake patient in Zurich in 1977 [4]. Today this is the most widely used standard treatment of choice for acute coronary syndrome. Moreover with the use of drug eluting stents, even unstable angina are being treated with PTCA [5]. Research also shows that acute transfer for PTCA in patients with extensive myocardial infarction is feasible and safe [6]. In fact, a study shows that a delay for Primary PTCA in case of ST-Elevating Myocardial Infarction (STEMI) is considered as major risk factor for high risk mortality in STEMI patients [7]. Furthermore, multiple trials with meta-analysis have revealed that even after fibrinolysis, many patients may require mechanical revascularization [8]. However, PTCA itself also carries a risk of restenosis in about 10.2% -12.0% patients [9].

CAG which is done as the first step of PTCA can be an opportunity to learn how many and which vessels are commonly involved in those patients who undergo PTCA. Some studies have shown that Left Anterior Descending (LAD) coronary artery is the most common coronary artery involved [10]. As no study has been reported from Nepal, this study was conducted to explore the angiographic findings of patients undergoing PTCA at Norvic International Hospital and to find the magnitude of CAD in these patients.

Methods

Norvic International Hospital is a referral hospital in the capital Kathmandu and serves as the most frequently visited hospital for emergency and routine coronary procedures. With the state of the art modern equipment with digitalized imaging processes, it performs cardiac catheterizations and angioplasty on a regular basis on patients referred from all over Nepal. A retrospective study was conducted on Nepalese patients who underwent PTCA at Norvic International hospital from January 2002 to end of June 2010. Foreign patients and those who were treated with conservative management including thrombolysis
were not included in the study. For coronary angiography, CORDIS Judkins catheter of size 6F- JR4/JL4 with diameter 0.057” was used. Non-ionic dye OMNIVAC 350mg was injected to visualize the site of stenosis. Likewise, CORDIS Judkins catheter size 6F- JR4/JL4 with diameter 0.070 inch was used for PTCA. Angiographic images were recorded on a videotape for review and storage. Data was collected from cathlab database of all the patients who underwent PTCA. Written informed consent was obtained in all cases. This is invariably complemented by thorough pre- and post-procedure counseling of the patients and family members. An occlusion of 60% or more was considered as severe stenosis and that of

Results

A total of 917 patients had undergone PTCA during the nine year period out of which 852 were Nepalese. The annual number of these PTCA cases is shown in Illustration 1 demonstrates a steady rise in the PTCA cases over the previous nine years. Coronary angiographic findings performed prior to PTCA revealed that in these Nepalese PTCA patients, SVD was the most common presentation (69.06%), followed by DVD (25.84%) and TVD (5.10%). On analysis of vessels commonly involved, Left Anterior Descending (LAD) was most commonly involved (56.0%), followed by Left Circumflex Artery (LCx, 34.2%), Right Coronary Artery (RCA, 31.4%) and Left Main coronary artery (LM, 0.4%) (Illustration 2). Some CAG snapshots showing stenoses are shown in Illustration 3.

Discussion

This study explored the magnitude of coronary artery disease in terms of number of vessel involved in the context of Nepal. We found that severe SVD (69.06%) presented more commonly than multi-vessel disease (MVD, 30.94%). Comparatively, in a Spanish population, Rafael [10] found the incidence of MVD (54%) to be more than SVD (46%). These variations could mean that ethnicity and geographic locations could play key roles in determining the coronary artery involvement and the severity of the artery involved. Role of ethnicity has been shown by Sempos S [11] in his study in which he coronary mortality variations among four major races in United States. One limitation of our study is that this population may not represent the whole spectrum of CAD patients of Nepal. This is because in the context of a developing country like Nepal, there are many who may remain undiagnosed or untreated, and in fact, only a very few patients can actually afford a relatively expensive procedure like PTCA.

Conclusion

This study highlights the coronary arteries that are commonly involved in the Nepalese patients who undergo PTCA. There is a rising epidemic of CAD in the Nepalese population. Changing lifestyle and urbanization, with their effects such as smoking, stressful life, poor quality food and sedentary lifestyle could be the underlying causes.

Acknowledgement(s)

The authors thank the cathlab staff for their contribution in data management of PTCA patients.

Authors Contribution(s)

Dr.Gauchan wrote the manuscript in collaboration with others. Dr. Rawat and Dr.Vaidya conceived the study idea. Dr. Vaidya was mainly involved in the analysis of the data. Dr. Rajbhandari, Dr. Jaiswal, Dr. Bhatta and Dr.Rawat were involved in the clinical works as well as for reviewing the manuscript drafts.

References

1. Suvedi BK. Of what diseases are Nepalese people dying? Kathmandu University Medical Journal (2007); 5: 121-123.
Prospective randomized comparison between thrombolysis, rescue PTCA and primary PTCA in patients with extensive myocardial infarction admitted to a hospital without PTCA facilities: A safety and feasibility study. Heart 1999; 82:426-431.


Illustrations

Illustration 1

Number of coronary angioplasty cases done in the Nepalese patients at Norvic International Hospital between 2002 and 2010.

Illustration 2

Distribution of coronary artery disease according to the vessels involved. (LM- Left Main Artery, LAD- Left Anterior Descending Artery, LCx -Left Circumflex Artery, RCA-Right Coronary Artery)
Illustration 3

Examples of coronary angiograms showing coronary artery stenoses

Illustration 3

![Examples of coronary angiograms showing coronary artery stenoses](image-url)
Disclaimer

This article has been downloaded from WebmedCentral. With our unique author driven post publication peer review, contents posted on this web portal do not undergo any prepublication peer or editorial review. It is completely the responsibility of the authors to ensure not only scientific and ethical standards of the manuscript but also its grammatical accuracy. Authors must ensure that they obtain all the necessary permissions before submitting any information that requires obtaining a consent or approval from a third party. Authors should also ensure not to submit any information which they do not have the copyright of or of which they have transferred the copyrights to a third party.

Contents on WebmedCentral are purely for biomedical researchers and scientists. They are not meant to cater to the needs of an individual patient. The web portal or any content(s) therein is neither designed to support, nor replace, the relationship that exists between a patient/site visitor and his/her physician. Your use of the WebmedCentral site and its contents is entirely at your own risk. We do not take any responsibility for any harm that you may suffer or inflict on a third person by following the contents of this website.