



## CASE STUDY ON CORONARY ARTERY DISEASE

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### ABSTRACT

Cardio vascular diseases currently are a leading cause of death in India. The Global Burden of diseases 2000 study reported an estimated mortality of 1.6 million in the year 2000 from coronary artery disease. However this mortality rate is on the increase. WHO has predicted a higher mortality rate by 2020 Cardio vascular diseases is the world's leading killer, accounting for 16.7 million or 29.2 per cent of the total global deaths in 2003. According to World Health Organisation (WHO) bulletins, 1.2 million Indians died from heart diseases in 1990 and it predicts that by 2010, 100 million Indians will have heart disease(25% of all cardiac patients global cardiac patient globally) and by 2020, India will supercede all other nations in terms of CAD prevalence., 62 million CAD by 2015, 60% worlds heart disease in India by 2020.

**Key words:** Cardio vascular, Disease, Diabetes Mellitus, Coronary artery, Atherosclerosis

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### CASE STUDY MR.X

Mr.X 59 year old male presented with history of Breathlessness and the chest pain on exertion for 15 days.Mr.X was a known case of Diabetes Mellitus for 15 years on T.Metformin and T.Glipizide. There is no significant history of chronic illness, communicable diseases, or surgery in his family. On blood investigation CK-MB increases.

ECG Showed ST segment elevation, on Echocardiography findings hypo kinetic and kinetic wall motion. Mr X was diagnosed as coronary Artery Disease.

**Coronary artery disease (CAD)** (or atherosclerotic heart disease) is the end result of the accumulation of athermanous plaques within the walls of the coronary arteries that supply the myocardium (the muscle of the heart) with oxygen and nutrients. It is sometimes also called coronary heart disease (CHD), but although CAD is the most common cause of CHD, it is not the only cause.

## **INCIDENCE**

- According to the World Health Organisation (WHO), cardio vascular diseases (CVDs) are the main cause of death globally. Every year, more people die of heart disease (coronary and rheumatic) than any other diseases.
- In 2004, almost 7.2 million people died of coronary heart disease. Globally, cardiovascular diseases account for 29 percent of all death.
- According to studies conducted by the WHO, people in the developing countries are now more prone to heart disease. Almost 82 percent of death caused by cardio vascular diseases (including diseases affecting the heart) occur in middle and low income countries. The key causes of CVDs include poor lifestyle, diet, stress and high blood pressure.

According to WHO, almost 23 million people will die of coronary and rheumatic heart diseases and stroke by 2030. The South Asia region will see an increase in the number of death due to heart disease.

## **CAD risk in Indians**

- In India 90 people die of heart disease every hour. 30% of adult population including vegetarian have inherent fact
- 10-15% of adult Indian population has CAD
- By 2015 India will have maximum coronary deaths in the world
- 3-4 times higher than white Americans
- 6 times higher than Chinese
- 20 time higher than Japanese
- CAD in India occur 5-10 years earlier

**ETIOLOGY**

<b>Book picture</b>	<b>Patient picture</b>
<p><b>Modifiable risk factors</b></p> <ul style="list-style-type: none"> <li>➤ High blood cholesterol level</li> <li>➤ Atherosclerosis</li> <li>➤ Cigarette smoking, tobacco use</li> <li>➤ Hypertension</li> <li>➤ Diabetes mellitus</li> <li>➤ Lack of oestrogen in women</li> <li>➤ Physical inactivity</li> <li>➤ Obesity</li> <li>➤ Physical exertion and emotional stress</li> </ul> <p><b>Non modifiable risk factors</b></p> <ul style="list-style-type: none"> <li>➤ Family history of coronary artery disease</li> <li>➤ Increasing age</li> <li>➤ Gender (heart disease occurs three times more often in men than in premenopausal women)</li> <li>➤ Race</li> </ul> <p><b>Other causes</b></p> <ul style="list-style-type: none"> <li>➤ Coronary lesion</li> <li>➤ Physical exertion and emotional stress</li> <li>➤ Aortic stenosis</li> <li>➤ Coronary vasospasm</li> <li>➤ Coronary artery embolism</li> </ul>	<p><b>Present</b></p> <p><b>Present</b></p> <p><b>Not known</b></p> <p><b>Present</b></p> <p><b>Not known</b></p>

**PATHOPHYSIOLOGY**

As a result of various etiological factors there will be a sticky endothelium and formation of plaque and lumen obstruction of the coronary artery leads to inadequate blood supply to the myocardium cause ischemia and infarction.

**CLINICAL FEATURES**

<b>Book picture</b>	<b>Patient picture</b>
1. Diaphoresis cold and clammy skin, facial pallor	Present
2. Hypotension	Present

3. Bradycardia	Present
4. Premature ventricular and atrial beats	Present
5. Palpitation, dyspnoea	Present
6. Severe anxiety	Present
7. Disorientation, confusion, restlessness	Absent
8. Fainting	Absent
9. Nausea & vomiting	Present

## INVESTIGATION

The echocardiogram showed acute MI, cardiac enzymes are elevated. Cardiac catheterization shows coronary artery disease. On ECG ST segment elevated and T wave inversion.

## MANAGEMENT

### 1. MEDICAL MANAGEMENT

- Supplemental Oxygen
- Nitroglycerine (Vasodilator)
- Morphine (Analgesics)
- Aspirin 150-300mg (Antiplatelet)
- Beta Blocker (Reduce Myocardial contraction)
- Angiotensin – converting enzyme inhibitor within 24 hours. (Prevents conversion of Angiotensin I to II and controls BP).

#### ➤ **Thrombolytic therapy**

To dissolve and lyses the thrombus formed and allow blood to flow enhancing reperfusion minimizing the size of infraction and preserving ventricular function.

#### ➤ **Percutaneous Coronary Intervention (PCI)**

It may be used to open the occluded coronary artery and promote reperfusion to the area that has been deprived of Oxygen.

#### ➤ **Anticoagulant therapy**

Prevents clot formation at the same lesion site.

#### ➤ **Invasive coronary Artery Procedures.**

#### ➤ **Percutaneous coronary Intervention include**

PTCA (Percutaneous transluminal coronary angioplasty)

Intracoronary stent implantation

Atherectomy and

Brachytherapy

➤ **Percutaneous transluminal coronary angioplasty**

It is an interventional procedure, a balloon tipped catheter is used to open blocked coronary vessels and resolve ischemia and infraction.

➤ **Coronary Artery Stent**

After PTCA, the area that has been treated may close off partially or completely called restenosis. A stent is a metal mesh that provides structural support to a vessel at risk of acute closure. The stent is positioned over the angioplasty balloon. When the balloon is implanted, the mesh expands and presses against the vessel wall, holding the artery open. The balloon is withdrawn, but the stent is left permanently.

It is an invasive interventional procedure that involves the removal of the atheroma, or plaque from a coronary artery by cutting, shaving, or grinding.

## 2. SURGICAL MANAGEMENT

### Coronary Artery Bypass Grafting

It involves anastomosis of a graft anatomised to aorta or its branches with other end of the graft secured to a distal portion or affected vessel and adequate blood flow is restored.

Neo-angiogenesis in a woman's heart after FGF-1 treatment

Beyond drug therapy, interventional procedures, and coronary artery bypass grafting, angiogenesis now offers a new, specific and – so far as we know from three human clinical trials – effective treatment targeted for women's coronary artery disease.

### MANAGEMENT FOR Mr. X

- Coronary artery bypasses grafting (CABG – coronary artery bypass surgery).
- Inj. Cefotaxime 1gm IV
- Inj.ciproflaxin 200mg IV Bd
- Inj. Metrogyl 500mg IV Tds

**NURSING INTERVENTION:**

1. Acute pain related to inflammation secondary to surgical manipulation
  - Pain is evaluated with pain scale score was 6 and provided rest before and after activities. provided warm back rub and analgesics
2. Self care deficit related to imposed activity restrictions and fatigue
  - Encourage x to participate in self care activities and kept necessary articles nearby him and assisted in sponge bath ,back care toileting and also feeding.

**SUMMARY**

Mr. X was very co-operative with health care personnel. Although symptoms were well responding to treatment, he was recurring, he did not develop further complications during hospital stay

**CONCLUSION**

Coronary artery disease is the most common form of heart disease in the Western world. Prevention centres on the modifiable risk factors, which include decreasing cholesterol levels, addressing obesity and hypertension, avoiding a sedentary lifestyle, making healthy dietary choices, and stopping smoking. There is some evidence that lowering homocysteine levels may contribute to more heart attacks (NORVIT trials). In diabetes mellitus, there is little evidence that very tight blood sugar control actually improves cardiac risk although improved sugar control appears to decrease other undesirable problems like kidney failure and blindness. Some recommend a diet rich in omea-3 fatty acids and vitamin C will reduce the risk of coronary artery disease. The World Health Organisation (WHO) recommends “low to moderate alcohol intake” to reduce risk of coronary disease although this remains without scientific cause and effect proof.

**REFERENCE**

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