



Case Study On Coronary Artery Disease

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Abstract: Coronary Artery Disease also called as Ischemic Heart Disease. It results from narrowing of the coronary arteries due to atherosclerosis. This is due to buildup of cholesterol and other materials, called plaque, on their inner walls. This buildup is called atherosclerosis. As it grows, less blood can flow through the arteries. As a result, the heart muscle can't get the blood or oxygen it needs. This can lead to chest pain (angina) or a heart attack. Over a time, CAD can also weaken the heart muscle and contribute to heart failure and arrhythmias. As of 2010, CAD was the leading cause of death globally resulting in over 7 million deaths. Males are affected more than females. 65 years male reported at a multispeciality hospital in southern part of kerala with the complaints of chest pain, nausea, light headache, fast heart rate for last 1 week. He had a past medical history of type 2 diabetes mellitus with hypertension. He was diagnosed with Coronary Artery Disease based on a blood tests and ECG. He was continuously monitored for 3 days and prescribed with medications. The patient was found stable, and he was discharged from the hospital with some discharge medications and patient advised to return for OPD follow up in 7 days.

Index Terms - Coronary Artery Disease, Aspirin, Patient Counselling.

I. INTRODUCTION

Coronary Artery Disease results from narrowing of the coronary arteries over time due to atherosclerosis. The primary effect of CAD is the loss of oxygen and nutrients to myocardial tissue because of diminished coronary blood flow. As the population ages, the prevalence of CAD is rising. Approximately 11 million Americans have CAD, and it occurs more often in males, whites, and in middle-aged and elderly. With proper care, the prognosis for CAD is favourable.^[1] CAD is the major cause of death in the US and worldwide. CAD was an uncommon cause of death at the beginning of the 20th century. Deaths due to CAD peaked in the mid-1960s and then decreased. However, this disease is still the leading cause of death worldwide.^[2] Obstructive coronary heart disease is the moderate shutting of arteries that offers supply the heart muscle with blood. This blockage is caused by a deposition of plaque (atherosclerosis). It can begin more likely in teenager and adults, moderate increase in some people. If the blockage gets severe adequate, it can block the flow of oxygenated blood in the heart's muscle. Sometime the blockage may occur acutely. This is called a heart attack. Obstructive Coronary Artery Disease is also called as Coronary Heart Disease (CHD). CHD is the leading cause of death in general population. Death of men is possible higher as compared to the women due to heart attack.^[3]

Diabetes mellitus is associated with an increased risk of cardiovascular disease including Coronary Artery Disease, Congestive Heart Failure.^[4]

CASE PRESENTATION:

PATIENT DESCRIPTION:

A 65years old male patient was brought to multispeciality hospital southern part of kerala on 3/05/25. He presented with complaints of chest pain, nausea, light headache, fast heart rate for the last one week. He was known case of hypertension and diabetic patient.

PHYSICAL EXAMINATION:

On examination he had a pulse rate-102bpm, blood pressure-94/60mmHg, heaving apex beat, heart sounds-S₁ is soft and S₂ is normal, pan systolic murmur at apex.

INVESTIGATIONS:

Blood tests shows that,

- The triglycerides had increased to 171mg/dl as compared to the normal value below 150mg/dl.
- The VLDL had increased to 34mg/dl as compared to the normal value 2-30mg/dl.
- The troponin I had increased to 0.670ng/ml as compared to the normal value below 0.04ng/ml.
- The ESR had increased to 55mm/hr as compared to the normal value of 0-55mm/hr.

- The TSH had increased to 5.7 IU/L as compared to the normal value 0.4-4.0 IU/L.

Other investigation includes,

- ECG
- Echocardiogram.

DIAGNOSIS:

The blood test, ECG and echocardiogram confirmed his diagnosis of Coronary Artery Disease.

TREATMENT:

His treatment includes,

- T. ECOSPRIN (ASPIRIN): It helps to prevent the formation of blood clot in your blood vessels. It is used to treat heart related chest pain. 75mg was given once a day (0-1-0).
- T. CLOPILET (CLOPIDOGREL): It is an antiplatelet medicine, used to treat heart attack. Once a day 75 mg is given (0-1-0).
- T. ATORVA (ATORVASTATIN): It works by blocking an enzyme (HMG-COA-reductase) that is required in the body to make cholesterol. It is used to lower the cholesterol and reduce the risk of heart disease. Once a day 80mg is given (0-0-1).
- INJ. CLEXAN (ENOXAPARIN): It will stops the unwanted blood clots forming and can stop any blood clots that have already formed growing bigger. Used to treat angina. Twice a day 0.6ml is given through subcutaneous route.
- INJ.PANTOCID (PANTOPRAZOLE): It blocks the action of the gastric pump that is responsible for the production of acid in the stomach. It is used to treat gastroesophageal reflux disease (GERD) such as acidity, heartburn, acid reflux. Once daily of 40mg is given through IV route.
- T. METOLAR (METAPROLOL TARTARATE): It is called as beta-blockers. Used to treat hypertension, angina, arrhythmia. Once daily of 25mg is given.
- T. NITROCONTIN (NITROGLYCERIN): It works by relaxing and widening blood vessels so blood can flow more easily to the heart. It is also used to treat heart related chest pain (angina). Twice a day of 2.6mg is given (1-1-0).
- T. BRILINTA (TICAGRELOR): It prevent blood from clotting inside the arteries and veins. It used as antiplatelet medicine. Twice a day of 90mg is given.

PROGNOSIS:

The patient improved slowly and after 2 days his vitals such as temperature at 96⁰ F (no fever), blood pressure-128/76mmHg, pulse rate-84bpm, SPO₂-98%, Random Blood Sugar (RBS)-142mg/dl.

On third day of his admission, he was normal with chest pain. He was discharged 6/5/25 with following medication to continue.

FOLLOW-UP: He was discharged on 6/05/25 with following medications

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DISCUSSION:

CAD is more common in diabetic patients, and its burden negatively impacts the health of affected population. The aggregation of lipid lesions in the vascular path can contribute the advancement of cardiovascular disease events such as heart failure and myocardial infarction. The hyperglycemia, hyperlipidemia, smoking, and excessive pressure in the blood stream can alter the functioning of the vascular cells. The injury to the endothelial cells causes decrease in the release of endothelial nitric oxide synthase, which leads to vasoconstriction in the blood vessels. Hypercholesterolemia increases superoxide free radicals production in the vessels which causes the release of inflammatory cells such as IL-1 β and TNF, interferon-gamma inhibits the matrix synthesis which causes proliferation of smooth muscles in blood vessels leads to formation of plaques and ultimately increase the risk of coronary artery disease. Previous studies suggested that regular cardiovascular disease and diabetic screening test can identify the future risk of cardiovascular abnormalities. American college of cardiology strongly recommends that the coronary artery disease screening test should be performed to summarize the risk profile characteristics of the diseased patients as an event of health care.

The pathological association between diabetes mellitus and cardiovascular disease is multifactorial which includes abnormal molecular mechanisms causing insulin resistance and hyperglycemia which ensues cardiovascular complications. The formation of atheromatous plaque-associated hardening of coronary artery with common mechanism of endothelial cell injury, smooth muscle cell proliferation, inflammatory reactivity, and plaque deposition leads to development of coronary artery disease.

The hyperglycemia levels are associated with various biochemical mechanisms which lead to converts the nicotinamide adenine dinucleotide to nicotinamide adenine dinucleotide hydrogen by cellular oxidation and form the uridine diphosphate N-acetyl glucosamine and increase the risk of metabolic abnormalities in the body. The glycosylation of proteins in the arterial wall of the heart is responsible for the development of atherosclerotic cardiovascular diseases in diabetes mellitus.^[5]

Hyperglycaemia and dyslipidaemia activates advanced glycation end product and polyol pathways and lowers the nerve function and thickening of hyalinization of the walls of small blood vessels causes impairment of endothelial dysfunction and reduces blood supply to the nerve cells increase the risk of nerve problems.

Regular health screening programmes can be initiated at hospitals by the health care team to identify the patients with high a risk of diabetic and to prevent them from diabetic complications among coronary artery disease patients. Eating low fatty foods, adherence to diabetic diet with antidiabetic mediations and maintaining controlled levels of blood sugar, lipid, and blood pressure can help in the prevention of coronary artery disease

complications with diabetes.^[6] The prevention of diabetic through early initiation of clinical pharmacist interventions on lifestyle modifications, medication adherence and dietary intake.^[7]

PATIENT COUNSELLING:

- **Smoking Cessation:** Smoking is a major risk factor for CAD, and quitting is crucial for reducing the risk.
- **Heart – Healthy Diet:** Focus on fruits, vegetables, whole grains, and lean proteins, while limiting saturated and trans fats, cholesterol, sodium, and added sugars.
- **Regular Exercise:** Aim for at least 30mins of moderate – intensity exercise most days of the week.
- **Weight Management:** Maintaining a healthy weight can significantly reduce the risk of CAD.
- **Stress Management:** Stress can exacerbate CAD, so finding healthy ways to manage stress, such as exercise, yoga, or meditation is important.
- **Blood Pressure and Cholesterol Control:** Regularly monitor and manage blood pressure and cholesterol levels through diet, exercise, and potentially medication if needed.
- **Alcohol:** Quit alcohol.
- **Adequate Sleep:** Aim for 7 – 8hrs of quality sleep per night.

CONCLUSION:

Effective medicine as a combined treatment, modern medicine and traditional preventive treatment such as regular exercises such as aerobic that strengthening the heart muscles and lower cholesterol diet, cardiac rehabilitation that improve the functional activity and improve quality of life. It also helps in reducing the cause of heart disease. It provides effective clinical findings in the treatment of certain diseases, such as ischemic heart disease. Therefore, in the treatment of this disease, the use of effective medicine method will cost less and improve the quality of life of patients. Therefore, according to modern medicine principles and other preventive treatments, it can be evaluated as a non-invasive therapeutic method that is very useful in the treatment of coronary heart diseases with the highest effect in a short time.

REFERENCE:

1. Joan P. Frizzel, Handbook of pathophysiology, volume 01, page no: 158
2. Dalen JE, Alpert JS, Goldberg RJ, Weinstein RS. Am J Med. The epidemic of the 20th century: Coronary Artery Disease, Sep 2014, volume: 127(9), page no: 807-812.
3. Kayaert P, Coeman M, Gevaert S, de Pauw M, Haine S. J Interv Cardio. Physiology-based revascularization of left main coronary artery disease. Volume 13, page no: 163-169(2021).
4. Poulsen M. K, Henriksen J. E, Dahl J, Johansen A, Gerke O, Vach W, Haghfelt T, Hoiland-carlsen P.K, Beck-Nielsen H, and Moller J.E. Circulation: Cardiovascular imaging. Left ventricular diastolic function in type 2 diabetics mellitus prevalence and association with myocardial and vascular disease. (2010), Volume-01, page no: 24-31.
5. Vaidya V, Ganga N, Sheehan J. Impact of cardiovascular complication among patient with type 2 diabetes mellitus: A systematic review expert rev pharmacoecoon outcome res. (2015), Volume: 15, Page no: 487-497.
6. Gjelsvik B, Tran AT, Berg TJ, Bakke S, Mdala I, Nokleby K. Exploring the relationship between coronary heart disease and type 2 diabetes, A cross-sectional study of secondary prevention about diabetes patients, BJGP (2019), Volume 3, page no: 1-11.
7. Omboni S, Caserini M. Effectiveness of pharmacist intervention in management of cardiovascular disease open heart, (2018) Volume 5, page no: 1-5.