Case Report

CORONARY ARTERY BYPASS GRAFTING IN YOUNG ADULT WITHOUT ANY SIGNIFICANT RISK FACTOR.

Muhammad Hamid Raza[a*], Saira Gull[a], Zafar Tufail[a], Asif Hussain[a]

[a]Punjab Institute of Cardiology, Lahore - Pakistan.
* Corresponding author:
dr.hamid15@live.com

Submission Date: 24-07-2020
Acceptance Date: 28-07-2020
Publication Date: 02-11-2020

All authors declare no conflict of interest.

This article may be cited as: Raza MH, Gull S, Tufail Z, Hussain A. Case Report: Coronary artery bypass grafting in young adult without any significant risk factor. J Cardiovasc Dis 2020;16(4): 166 - 169

ABSTRACT:
Coronary heart disease is not limited anymore to middle aged and elderly people; when CHD develops in the younger age group, it usually has distinct characteristics in term of risk factors and clinical presentation. In this case report, we will discuss a 23 years old male who presented with stable angina; he underwent complete cardiac workup and was found to have multi-vessel premature coronary artery disease.
Learning Objective: This case report will lead to diagnose coronary artery disease at an early age.

(J Cardiovasc Dis 2020;16(4): 166 - 169)

INTRODUCTION:

Coronary Heart Disease (CHD) is currently one of leading causes of death in both, developing & developed countries; it is generally considered as a condition affecting the middle aged and elderly population. The incidence of CHD increases with age; however the etiology, risk factors and clinical presentation usually varies from individuals suffering from premature CHD.

Low high-density lipoproteins (LDL) and high Triglycerides levels have been shown to have a greater correlation with premature CHD. [1,2] Metabolic syndrome , being a risk factor for CHD, has been shown to have increased levels of Lp(a). [3]

CHD risk factors also differ in younger population; premature CHD has strong association with smoking and family history, and less so with diabetes and hypertension. In case of clinical presentation, studies have revealed that younger patients with CHD more often present with acute coronary syndrome as compared to stable angina.[1,2] This may be due to the fact that premature CHD more often presents as single vessel disease as compared to multi-vessel disease.[1,2,4,5] The following case report includes an unusual presentation of premature CHD in a young individual.

CASE REPORT:

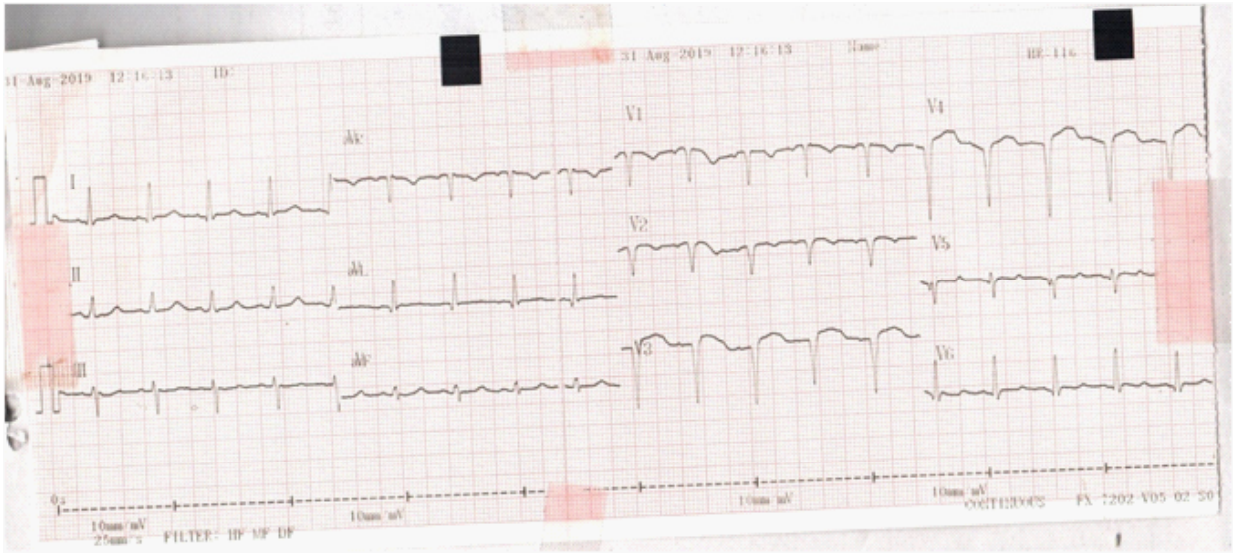
A 23 year young male, farmer with thin lean physique, felt discomfort in chest and slight heaviness in left arm while working at his farm. He was short of breath and went to a local quack, got an injection and pain killer. Pain got relieved eventually. Three four of these episodes occurred over a period of couple of months. After multiple events he visited a Heart Specialist, where the basic workup including detailed blood tests, ECG, Chest X-ray and cardiac enzymes was performed. Vital signs showed blood pressure of 100/50 mmHg, pulse rate of 95 beats/min (bpm), respiratory rate of 22/min, temperature of 36.5°C and O_2 saturation of 97%. Patient was comfortably sitting on his bed and his cardiac examination was normal without any murmurs. His chest was clear and there was no history of smoking, definitive family history of CHD and drug abuse. He was thin lean, weighing 50 kg and 158 cm height (BMI= 20m/kg) and his ECG was found abnormal and showed Q waves with ST segment elevation in V_1-V_4. Then further workup including Echocardiography, Coronary Angiography and Thallium scan was carried out at a tertiary care hospital.

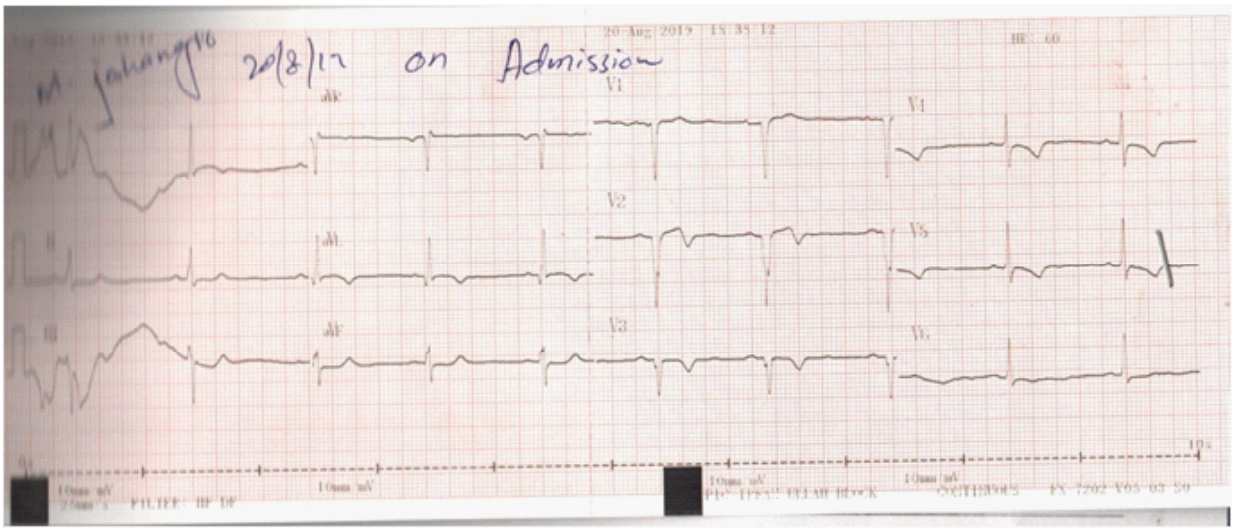
Echocardiography showed moderate left ventricular systolic dysfunction with segmental wall motion abnormalities of hypokinetic apex, apical mid anterior wall and apical 1/3rd of lateral wall. Rest of the dimensions were in normal range and ejection fraction was 40 %. Thallium scan showed partial thickness MI (viable myocardium) involving apex, apical segments of antroseptal wall and interventricular septum. Myocardium was viable in all major vascular territories. Coronary angiography showed triple vessel disease with following findings:

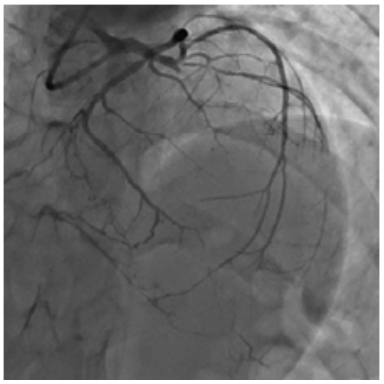
LMS: Normal, bifurcating vessel.

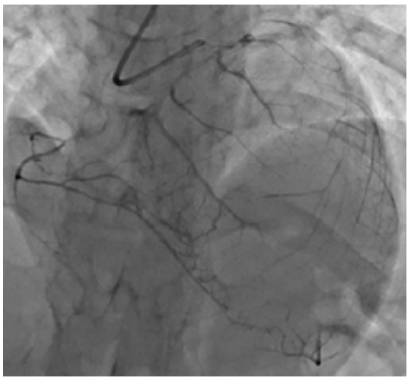
LAD: Total proximal occlusion with antegrade flow.

LCX: Co-dominant vessel with severe ostial stenosis.









RCA: Co-dominant vessel. Total proximal occlusion, distal vessel fills retrogradely through left collaterals.

Based on coronary angiographic findings, a diagnosis of "Triple vessel disease (3VCAD) " was made. Patient was referred to surgical unit and coronary artery bypass grafting (CABG) was advised. Patient was operated.

OPERATIONAL FINDINGS:

Moderately contracting heart with normal ascending aorta, Atherosclerotic lesions in targeted vessels, Small and non-graftable RCA.

GRAFTS:

LIMA to LAD	1.5 mm
RGSV to Diagonal	1.0 mm
RGSV to OM	1.0 mm

With good distal run off.

Following surgery patient was shifted to ICU in stable condition. Patient showed smooth recovery after operation & was discharged on 6th post operative day.

DISCUSSION:

Coronary revascularization is a process of establishing perfusion to the ischemic myocardium. In patients with stable or unstable angina, revascularization is mandated to improve perfusion and relieve the symptoms. The advancements in treatment modalities have lead to improvement in both quality of life and decrease in mortality. Despite the scientific evolution, CHD remains one of leading causes of death both in developed and developing countries in patients over the age of 35 years with this percentage reaching up to 50% (according to some resources) in western countries. [6,7] Coronary revascularization comprises of two modalities: the percutaneous coronary intervention (PCI) and the coronary artery bypass grafting(CABG). There are several factors which need to be considered while opting for revascularization i.e. clinical, anatomical and associated co-morbid factors. Several meta-analyses revealed that revascularization alleviate symptoms more efficiently than medical treatment alone. [8,9] The clinical efficacy of PCI has been examined in combination with medical therapy but the most recent meta analyses showed that compared with medical therapy: PCI didn't re-

sulted in significant outcome in all cause mortality . However, PCI did show a better relief in angina symptoms than medical therapy alone.[10] Another meta-analysis compared the effects of PCI with medical therapy and medical therapy alone: review found that objectively there was no difference noted between PCI and medical therapy in terms of death, MI, unplanned revascularization and angina on 5 year median follow-up.[8]

The surgical intervention (CABG) in a specific subset of stable CHD was compared with medical therapy and demonstrated that the CABG had significantly lower mortality as compared to medical therapy. Benefits were more notable in patients with severe disease, early positive ETT and depressed LV function.[11] Furthermore, the medicine, angioplasty and the surgery study (MASS II) compared PCI, CABG and medical therapy in patients with stable angina, multi-vessel disease, preserved LV function and concluded that CABG compared with medical therapy decreased an increased incidence of subsequent MI and additional revascularization. And compared with PCI it exhibited recurring need of revascularization and MI. Moreover, CABG was deemed better at relieving angina symptoms as compared to medical treatment.[12] Nevertheless, CABG demonstrates a complete revascularization than PCI.

CONCLUSION:

There are many factors that make this case an atypical presentation of premature CHD with risk factors. He doesn't exhibit a familial dyslipidemia syndrome (Metabolic syndrome) or secondary hypertension that would predispose to premature CHD. In fact, we couldn't find any definitive modifiable or non modifiable risk factor in this patient which could lead to an early development of triple vessel heart disease, which is alarming itself. We propose that health care professionals do not exclude the differential diagnosis of heart disease, if any adult present with typical or atypical symptoms of heart disease and educate them about young age being a protective factor to a limited extent.

REFERENCES

1.N. A. M. D. Y. S. F. Ö. N. Yildirim, "Comparison of traditional risk factors, natural history and angiographic findings between coronary heart disease patients with age <40 and ≥40 years old," The Anatolian Journal of Cardiology, vol. 07, no. 02, pp. 124-127, 2007.

2.M. C. J. K. L. Chen, "Clinical factors and angiographic features associated with premature coronary artery disease," chest, vol. 108, no. 02, pp. 364-369, 1995.

3.A. Y. B. P. S. E. M. K. İ. A. T. U. A. A. B. Ö. H. M. H. Bozbaş, "Increased lipoprotein(a) in metabolic syndrome: is it a contributing factor to premature atherosclerosis?," Anadolu Kardiyoloji Dergis, vol. 08, no. 2, pp. 111-115, 2008.

4.F. M. V. R. J. V. P. M. F. S. J. Pineda, "Premature myocardial infarction: clinical profile and angiographic findings," International Journal of Cardiology, vol. 126, no. 1, pp. 127-129, 2008.

5.F. C. A. F. L. G. N. Zimmerman, "Myocardial infarction in young adults: Angiographic characterization, risk factors and prognosis (coronary artery surgery study registry)," Journal of the American College of Cardiology, vol. 26, no. 3, pp. 654-661, 1995.

6.R. J. A. M. B. Donald Lloyd-Jones, "Executive Summary: Heart Disease and Stroke Statistics—2010 Update," Circulation, vol. 121, no. 7, pp. 948-954, 2010.

7.N. T. P. S. M. R. Melanie Nichols, "Cardiovascular disease in Europe 2014: Epidemiological update," European Heart Journal, vol. 35, no. 42, pp. 2950-2959, 2014.

8.W. B. P. H. e. a. K. Stergiopoulos, "Percutaneous coronary intervention outcomes in patients with stable obstructive coronary artery disease and myocardial ischemia: a collaborative meta-analysis of contemporary randomized clinical trials," JAMA Intern Medicine, vol. 174, no. 2, pp. 232-240, 2014.

9.S. S. G. S. e. a. S. Windecker, "Revascularisation versus medical treatment in patients with stable coronary artery disease: network meta-analysis," BMJ, vol. 348, p. 3859, 2014.

10.F. K. R. G. e. a. S. Pursnani, "Percutaneous coronary intervention versus optimal medical therapy in stable coronary artery disease: a systematic review and meta-analysis of randomized clinical trials," Circulation : Cardiovascular intervention, vol. 5, no. 4, pp. 476-490, 2012.

11.D. Z. P. P. e. a. S. Yusuf, "Effect of coronary artery bypass graft surgery on survival: overview of 10-year results from randomised trials by the Coronary Artery Bypass Graft Surgery Trialists Collaboration," Lancet, vol. 344, no. 8922, pp. 563-570, 1994.

12.N. L. B. G. e. a. W. Hueb, "Ten-year follow-up survival of the medicine. Angioplasty, or surgery study (MASS II). A randomized controlled clinical trial of 3 therapeutic strategies for multivessel coronary artery disease," Circulation, vol. 122, no. SUPP 18, pp. 949-957, 2010.