



CORONARY HEART DISEASE IN A YOUNG ADULT, AN EMERGING PHENOMENON: A CASE REPORT

General Medicine

Vinod Kumar	MD Medicine, SGL Charitable Hospital, Jalandhar.
Kabir Bansal	Second year, MBBS, Punjab Institute Of Medical Sciences, Jalandhar.
Varun Sodhi	PGY-1 Internal medicine, Mountain View Hospital, LV, Nevada
Anika Chhabra	Medical Officer. SGL Charitable Hospital, Jalandhar.

ABSTRACT

Coronary heart disease (CHD) is not restricted to aged population anymore; when premature CHD develops in the younger individuals, it has distinct features and clinical presentation. The following describes a 21-year-old male who presented with stable angina and was found to have multi vessel coronary disease. Just at the age of 21, he got coronary artery bypass graft (CABG). The lab work done revealed the presence of mild dyslipidemia, high blood pressure, obesity, first hand smoking and a family history of lifestyle disorders were sufficient to induce ischemic heart disease at such an early age suggesting that "youth" can serve as protective factor only to a certain limit.

INTRODUCTION

CHD is presently the leading cause of death in the world with generally affecting the elder populations. However now a days it is emerging as a big threat in younger populations because of their lifestyle and presence of various risk factors. The Framingham study reported a 10-year incidence rate per 1000 myocardial infarctions of 12.9 in men of 30 to 34 years old and 5.2 in women of 35 to 44 years old.¹ Review of a few studies, however, proved only approximately 4% of patients who had myocardial infarction (MI).¹ Clinical and epidemiological studies have been conducted in identifying the risk factors and surgical outcomes in this group of patients.^{2,3} CHD risk factors differ in young population as in them it shows greater association with obesity, smoking and family history than hypertension and diabetes. In terms of clinical presentation, studies have revealed that younger patients with CHD more often present with acute coronary syndrome as opposed to stable angina.^{4,5}

This is may be due to the fact that in young patients CHD is usually a single vessel disease as opposed to multivessel disease. The following case involves an unusual presentation of premature CHD in an uncommonly young individual.

KEYWORDS

Coronary heart disease, stable angina, myocardial infarction, heart, diabetes, smoking

CASE REPORT

A 21-year-old male college student came with the chief complaint of heaviness in his chest after walking a slight inclination in the campus for 40 minutes. He was extremely short of breath, and collapsed on a nearby chair to rest for a while but the crushing type pain in his chest persisted. He rushed to the hospital where diagnostic tests like electrocardiogram (ECG), chest X-ray and cardiac enzymes (troponin (SERIES), CKMB) did not reveal any acute pathology. Vital signs showed raised blood pressure (BP) of 157/99 mmHg, pulse of 98 beats/minute (bpm), respirations of 22/minute, temperature of 36.8 °C, and oxygen saturation of 97%. On physical examination, the patient was in mild distress, and his EKG showed a steady rate and rhythm without murmurs, S3 or S4. His lungs were clear on auscultation, and the chest discomfort was not reproducible. He was of obese stature, weighing 128 kg and 185 cm tall (BMI 37.4). The patient's extremities were well perfused. He had a 3 pack-year smoking history and a family history of CHD, including his paternal aunt and great grandparents. The clinical diagnosis was of stable angina and the patient was discharged home following short observation and standard medications- aspirin 90 mg, propranolol 20 mg and atorvastatin 40 mg and was listed for a follow up visit. Follow-up laboratory work showed some insulin resistance and mild dyslipidemia; LDL 80 mg/dL, HDL 32 mg/dL, triglycerides 200 mg/dL, and Lp(a) 69.4 mg/dL. Further on follow-up, the patient underwent exercise stress testing in which resting EKG showed normal sinus rhythm; vitals included BP of 135/81 mmHg and pulse of 84 bpm. During the peak phase of stress testing, BP reached 198/86 mmHg and pulse was 180 bpm; he showed chest pain, dyspnea, and light headedness. ECG changes presented non-sustained ventricular tachycardia. During the recovery phase, the patient's chest pain and dyspnea decreased. ST segment depression was seen in V5 and V6, and T wave inversion was seen in aVL. The remaining recovery phase was unremarkable with normalization of the ECG. The patient underwent echocardiography, which showed mild concentric left ventricular hypertrophy. Computed coronary tomography angiography (CTA) revealed a large soft plaque in the distal left main coronary artery (LMCA) extending into the left anterior descending coronary artery (LAD) (85% occluded) and the origin of the left circumflex coronary artery (LCX) (80% occluded). The patient subsequently underwent left cardiac catheterization and left ventriculography, which showed normal size and contractility of the left ventricle with an ejection fraction of 65%. The LMCA, LAD,

LCX, and right coronary artery (RCA) were of medium diameter. The procedure showed RCA dominance. There was 70% discrete stenosis in the distal LMCA, an 85% long lesion in the proximal LAD, and 80% discrete ostial stenosis in the proximal LCX. Due to LMCA involvement and his progressive anginal symptoms, the patient underwent coronary artery bypass surgery in addition to an optimal medical therapy and strict risk factor reduction. All other lab investigations like CBC, CMP, RFT, Lipid panel and urine analysis were done prior to CABG. The consent was obtained and patient was counselled for the surgery. The surgery performed was a two-vessel coronary bypass procedure, with left internal mammary artery graft to the LAD and aortocoronary left radial artery graft to the left circumflex artery. Post recovery after 3 weeks, he was resumed for his normal life activities and was motivated for healthy lifestyle. He was encouraged to be enrolled in smoking cessation program, exercise program and was referred to a dietician for a healthy diet. He was put on anti-anginal medications and was encouraged to keep a track of regular blood pressure monitoring.

DISCUSSION

The patient's young age and good cardiac function resulted in quick recovery and restoration. There are many features that make this case an atypical presentation of premature coronary disease out of which age is the major feature. His lipid profile shows a low HDL and borderline increased triglycerides; lipoprotein A [Lp(a)] was evidently high. It is also worth noticing the presence multivessel disease and stable angina; features like these are more communicative of CHD in an elderly patient. Thus, the combination of slight dyslipidemia, hypertension, smoking, obesity, and a family history was satisfactory to induce severe CHD at just 21 years of age. It is advantageous that risk factor identification and reduction for CHD begin early in life. In current era, primary prevention includes the identification of the genetic risks as well as optimizing the modifiable risk factors by improving lifestyle. This is very important for the current generation before the target organ damage occurs. We suggest that physicians should be aware of increasing number of cases of young patients with substantial CHD and should not exclude ischemic heart disease in their differential diagnosis. A loose monitoring and follow up is necessary in such patients. These individuals should be educated that "youth" can serve as a protective factor only to an extent.

REFERENCES

1. Zimmerman FH, Cameron A, Fisher LD, Grace NG. Myocardial infarction in young adults: Angiographic characterization, risk factors and prognosis. *JACC* 1995; 26: 654-61
2. Mukherjee D, Hsu A, Moliterno DJ, Lincoff AM, Goormastic M, Topol EJ. Risk factors for premature coronary artery disease and determinants of adverse outcomes after revascularization in patients 40 years old. *Am J Cardiol* 2003; 92:1465-7
3. Kanitz MG, Giovannucci SJ, Jones JS, Mott M. Myocardial infarction in young adults: Risk factors and clinical features. *J Emerg Med* 1996; 14:139-45
4. Yildirim N, Arat N, Dogan MS, Sokmen Y, Ozcan F. Comparison of traditional risk factors, natural history and angiographic findings between coronary heart disease patients with age <40 and ≥40 years old. *Anadolu Kardiyol Derg* 2007; 7:124-7.
5. Chen L, Chester M, Kaski JC. Clinical factors and angiographic features associated with premature coronary artery disease. *Chest* 1995; 108:364-9.