

Not so Young at Heart: A Case Report of Acute Myocardial Infarction in a 23-year-old Young Adult

Mark Donn Andres, MD,¹ Emily Mae Yap, MD, FPCP¹ Lucky Cuenza, MD, FPCP¹

ABSTRACT

Background. Acute myocardial infarction (AMI) among young people is relatively uncommon. The protection offered by a young age has been slowly taken away by the increased prevalence of risk factors for CHD in adolescents such as smoking, obesity, and lack of physical activity.

Case. This is a case of a 23-year-old male smoker with no known comorbid and hereditary diseases who was admitted due to sudden onset of severe, stabbing, substernal chest pain. ECG was done which showed sinus rhythm with some premature ventricular depolarizations occurring in bigeminy, and ST elevation on V4-V6, I and AVL with reciprocal ST depression on III, AVF (Fig 2) consistent with extensive anterior wall myocardial infarction. Troponin I was elevated (7.57 ng/ml). Coronary angiography was done revealing a luminal filling defect at the distal segment of the left main artery consistent with thrombus formation. The patient underwent percutaneous coronary intervention of the left main artery and left anterior descending artery with TIMI III flow after the procedure. He was then discharged improved and was advised to take his home medications with good compliance.

Conclusion. MI in younger patients does carry a better prognosis if appropriately treated to be taken into consideration when treating these young adults presenting with MI. Emphasis on the importance of secondary preventive measures should be noted.

Keywords: Acute myocardial infarction, case report, coronary angiography, percutaneous coronary intervention, risk factors

INTRODUCTION

Acute myocardial infarction (AMI) among young is relatively uncommon. Still, it is an important problem for the patient and the treating physician, as these patients have different risk factors, clinical presentation, and prognosis than the older patients. There are few studies of risk factor profile and pattern of coronary artery involvement in AMI in young.¹ A recent retrospective study of patients aged 19 to 30 years old who were diagnosed with AMI at the Philippine Heart Center showed that the prevalence of AMI in very young Filipino adults admitted at this institution was 0.93% (11/1182).²

Although rare, acute myocardial infarction should be considered in young adults presenting with chest pain. The disease carries significant morbidity, psychological effects, and financial constraints for the person and the family when it occurs at a young age. The protection offered by a young age has been slowly taken away by the

increased prevalence of risk factors for CHD in adolescents such as smoking, obesity, and lack of physical activity.

CASE REPORT

This is a case of a 23-year-old male smoker with no known comorbid or hereditary disease who was admitted at our institution due to sudden onset of severe, stabbing, substernal chest pain. He sought consult at a local hospital where ECG was done showing ST elevation of the anterolateral wall. (Figure 1) He was then immediately transferred to our institution for further management. At the emergency room, the patient continued to complain of severe chest pain. No other associated symptoms. Vital signs were stable (BP 130/70, HR 75, RR 18, T 36.5°C, O₂ sat 99% at room air). Physical examination findings including cardiac examination were unremarkable. ECG was repeated which showed sinus rhythm with some premature ventricular depolarizations occurring in bigeminy, and ST elevation on V4-V6, I and AVL with reciprocal ST depression on III, AVF (Figure 2) consistent with extensive anterior wall myocardial infarction.

¹ Division of Adult Medicine, Department of Internal Medicine, Philippine Heart Center
Corresponding Author: Mark Donn Andres, MD
eMail: markdonnandres@yahoo.com

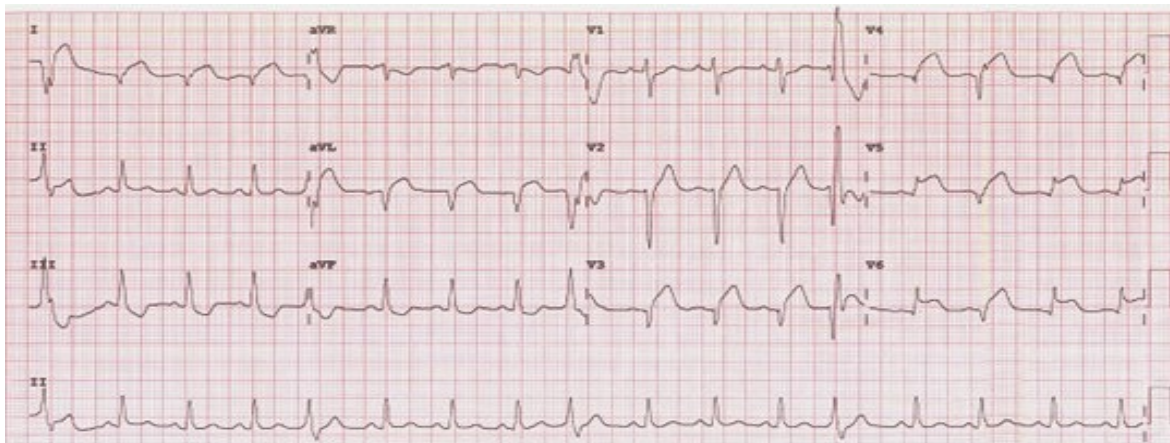


Figure 1 Electrocardiogram of patient. ST elevation is noted on chest leads V3-V6 with reciprocal changes on leads I and aVL

Troponin I was elevated (7.57 ng/ml). Complete blood count revealed leukocytosis with neutrophilic predominance. Creatinine 0.12, Na 138, K 3.6. A chest x-ray showed mild pulmonary congestion. Heparin 5000 units were given intravenously. Aspirin 300mg tab 1 tab, clopidogrel 75mg tab 8 tabs, and atorvastatin 80 mg tab were given. *Isoket* drip at 1 mg/hr was started to relieve the chest pain.

Coronary angiography was done revealing a luminal filling defect at the distal segment of the left main artery consistent with thrombus formation. (Figure 3) This was noted to trifurcate into the left anterior descending (LAD), ramus intermedius, and left circumflex arteries (LCX). The LAD was a good-sized, type II vessel with luminal filling defect at the ostioproximal segment consistent with thrombus formation. There is likewise an eccentric 70-80% ostioproximal stenosis. The rest of the vessel appeared

normal with TIMI II flow. At the distal segment of the second diagonal branch, a luminal filling defect consistent with thrombus formation was noted. Heparin drip was started. GP IIb/IIIa could not be given due to financial constraints.

2D echocardiography revealed normal left ventricular dimension with hypokinetic interventricular septum from base to apex, a hypokinetic anterior left ventricular free wall from base to apex with borderline systolic function (EF 53%) and Doppler-evidence of grade II diastolic dysfunction and increased filling pressure. On the fifth hospital day, the patient underwent percutaneous coronary intervention of the left main artery and left anterior descending artery with TIMI III flow after the procedure (Figure 4). There were no complications. Aggressive anti-platelet regimen and secondary prevention were emphasized. He was then discharged

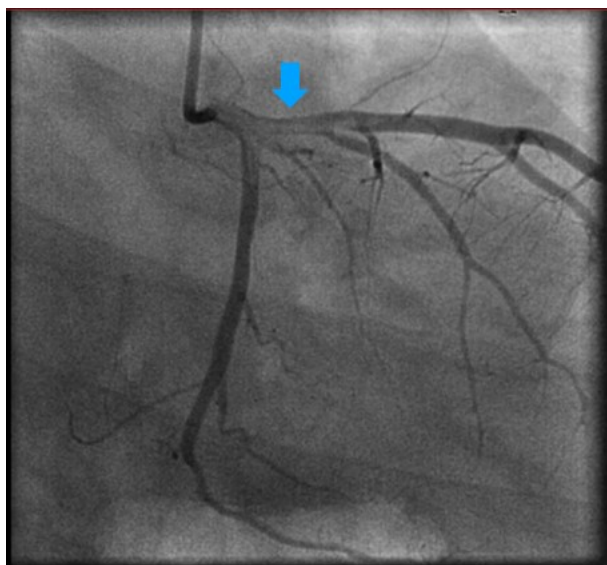


Figure 2. Coronary Angiogram. Filling defect noted on the proximal left anterior descending artery

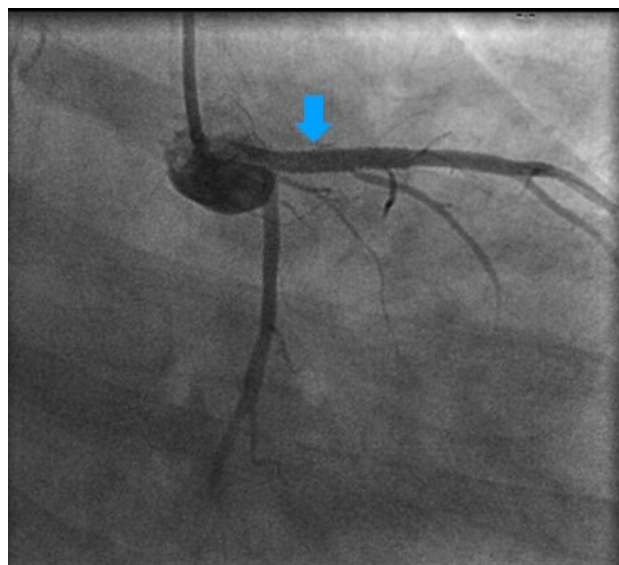


Figure 3. Coronary angiogram. Post-PCI of the proximal left anterior descending artery

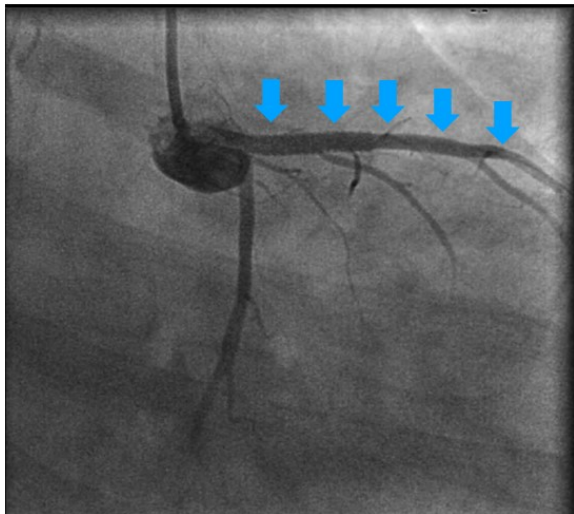


Figure 4 Post PCI Coronary Angiogram of the LAD. Post PCI Coronary Angiogram of the LAD showing TIMI 3 Flow

improved on the seventh hospital day and was advised to take the following medications with good compliance: aspirin 300mg tab 1 tab once a day, clopidogrel 75mg tab 1 tab twice a day for one week then 1 tab daily thereafter, metoprolol 50mg tab 1 tab twice a day, imidapril 10mg tab 1/2 tab once a day, atorvastatin 80mg tab 1 tab once a day and ranitidine 150mg tab 1 tab twice a day.

DISCUSSION

The prevalence of risk factors is on the rise in young adults and children. The only risk factor documented in our patient is his smoking history. Smoking, which has been traditionally recognized as the most common risk factor for heart disease, is increasingly prevalent in young adults and adolescents. Cigarette smoking continues to be a health hazard, and it contributes significantly to cardiovascular morbidity and mortality. Cigarette smoking impacts all phases of atherosclerosis from endothelial dysfunction to acute clinical events.

Early diagnosis of acute myocardial infarction is essential and should be considered in patients presenting with chest pain in the emergency department. Early stabilization should be followed by risk stratification, and early revascularization, where appropriate, should be offered as it carries a better clinical outcome.³ Risk factors modification should be emphasized.

Other causes of MI among patients aged less than 45 include the following: Atheromatous CHD, Non-atheromatous CHD, Hypercoagulable states, and MI related to substance misuse.⁴ Further workup should be done in this case to exclude other risk factors such as coronary artery anomalies, premature coronary artery disease, and hypercoagulable state.

CONCLUSION

Acute myocardial infarction is rare in teenagers and young adults. The pathophysiology of their infarcts is varied but not usually due to atherosclerotic plaque rupture except for those with genetically predetermined or familial hyperlipidemias. Appropriate treatment has to be adapted from adult management protocols, as there are no controlled trials to guide early treatment of myocardial infarction in this age group.

REFERENCES

1. Rajeev Bhardwaj, Arvind Kandoria, and Rajesh Sharma. 2014 Myocardial infarction in young adults-risk factors and pattern of coronary artery involvement Niger Med J. Jan-Feb; 55(1): 44-47
2. EML Yap, RL Cuenza, ABR Medrano. 2018. Acute Myocardial Infarction In Very Young Filipinos, December 2018, Global Heart 13(4):413
3. Egred M, Viswanathan G, Davis GK. Myocardial infarction in young adults. Postgrad Med J. 2005;81(962):741-745. doi:10.1136/pgmj.2004.027532
4. S Osula, G M Bell, R S Hornung, 2002 Acute myocardial infarction in young adults: causes and management, Postgrad Med J 2002;78:27-30