Acute Coronary Syndrome Non-ST Elevation in a Young Lady

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Abstract

Introduction: Acute coronary syndrome (ACS) presenting as non-ST-elevation myocardial infarction (NSTEMI) in a very young Filipina female with a maternal history of premature coronary artery disease and no comorbidities is a rare occurrence and seldom suspected. An integral approach using clinical presentation, information derived from ECG, cardiac troponin and risk assessment criteria should be used in order to arrive at the proper diagnosis and management. The other challenges encountered were angioedema secondary to clopidogrel hypersensitivity and financial constraints. These factors should be taken into consideration when deciding the short and long-term treatment especially after percutaneous coronary intervention and stenting.

Case presentation: A 27-year-old active, female, Filipino, single, with a normal body mass index, non-smoker non-alcoholic drinker, no use of recreational drugs, no history of previous hospitalization, and comorbidities presented with sudden onset severe angina accompanied by diaphoresis and dyspnea. She was immediately brought to a local hospital, 12LECG showed T wave inversion on the inferior leads, troponin I was positive at 0.51ng/ml (0-.08) She was given aspirin, followed by clopidogrel in which she developed periorbital edema, dyspnea and was treated immediately with intravenous hydrocortisone and maintained on cetirizine and prednisone for five days. The clopidogrel was shifted to cilostazol. A coronary angiogram was done which showed a severe coronary artery disease at proximal right coronary artery. She underwent percutaneous coronary with stenting and was discharged stable and improved.

Conclusion: A delay in diagnosis and management may happen in a very young Filipino female presenting with acute chest pain and no comorbidities. A family history of premature coronary artery disease is a clinical marker of risk for acute coronary syndrome. A genetic testing may further establish this relationship. The clinical presentation of typical angina, T-wave inversions on inferior leads, highly abnormal cardiac troponin and very-high-risk criteria of recurrent or ongoing chest pain refractory to medical treatment warrants an immediate invasive strategy of coronary angiogram with revascularization. An angioedema secondary to clopidogrel hypersensitivity is a rare complication and can cause reluctance in a patient. The financial capacity to maintain long term treatment of dual antiplatelet should be considered for better compliance. A shared decision making between the physician and patient is a valuable tool in facing these challenges.

Keywords: myocardial infarction, young adult, cilostazol, clopidogrel hypersensitivity, case report

Introduction

Acute myocardial infarction is commonly an adult disease that is associated with atherosclerosis risk and diseases.[1] It seldom happens in a very young adult defined as aged less than 30 years old.[2] The risk factors are sought to support the clinical suspicion. However in a young female with only a family history of premature coronary artery diease, should not preclude the right diagnosis and treatment.[3] A non-ST segment elevation MI managed with revascularization in this group may have a good and long term quality of life.[4]

The researchers aim to: (1) to be able to identify other clinical markers of risk of acute coronary syndrome and assess the delay encountered in a young female with NSTEMI; (2) to be able to integrate history, physical examination and ECG on non-ST-elevation acute coronary syndromes using cardiac troponin assays and risk assessment criteria to synthesize a proper diagnosis and management; (3) to identify special challenges such as angioedema secondary to clopidogrel hypersensitivity, financial constraints in maintaining treatment and to formulate short- and long-term solutions

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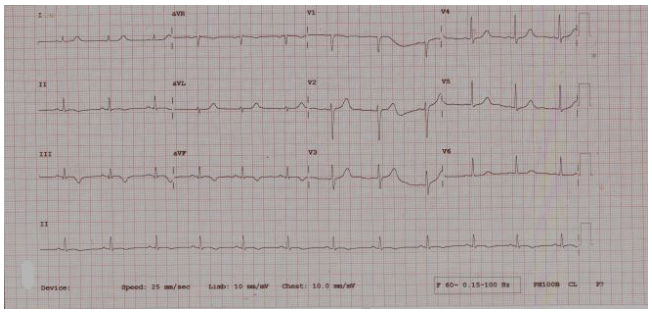

Figure 1. T wave inversion on leads II, III, aVF

Case

A 27-year-old Filipino, female, single was referred at our institution due to sudden onset severe chest pain characterized as heaviness non-radiating, accompanied by diaphoresis, dyspnea and not relieved by rest. She had no previous hospitalization and lives an active life style. She does not smoke, drink alcohol nor use of recreational and oral contraceptive drugs. She has no history of any drug allergies. However, her mother had a history of premature coronary artery disease. On her first consultation, she was treated as a case of acute coronary syndrome and given aspirin 80mg/tab four tablets, atorvastatin 80mg/tab one tablet followed by clopidogrel 75mg/tab four tablets in which she developed periorbital edema and dyspnea. A hydrocortisone 100mg/IV, omeprazole 40mg/IV and isosorbide mononitrate 5mg/tab sublingual one tablet for three doses were given. However, there was persistence of symptoms hence advised transfer at our institution. Upon arrival at our emergency room, patient was conscious coherent with chest and dyspnea. Her vital signs were: BP 120/70, HR 83, RR 22, T 36.8, O2 saturation 99% at room air and body mass index of 22.2kg/m^2. She has pink palpebral conjunctiva, periorbital edema, lungs were clear, heart was not enlarged, apex beat not displaced, no S3, S4 and appreciable murmurs.

On 12LECG it was sinus rhythm with T-wave inversion at the inferior leads (Figure 1) troponin I was positive and beyond 5-fold the upper limit of normal at 0.51ng/ml (0-0.08). The following laboratories showed complete blood count hemoglobin 121g/l hematocrit 37%, leukocytosis 10.40 and thrombocytosis 530, prothrombin time 86% activity, INR 1.10, Na 144 K 3.1, Creatinine 0.7mg/dl, HBA1C 5.10%, lipid profile, urinalysis and chest x-ray were normal. On 2D echocardiography there was concentric left ventricular remodeling with normal wall motion, contractility and systolic function.

Given the patient's young age, clinical presentation of typical angina, maternal history of premature coronary artery disease, 12LECG of T wave inversions of the inferior leads, normal chest x-ray and normal LV function with good wall motion and contractility on 2D echocardiography. The other common and important causes of chest pain were ruled out, such as cardiomyopathies, tachyarrhythmias, acute heart failure, hypertensive emergency, aortic valve

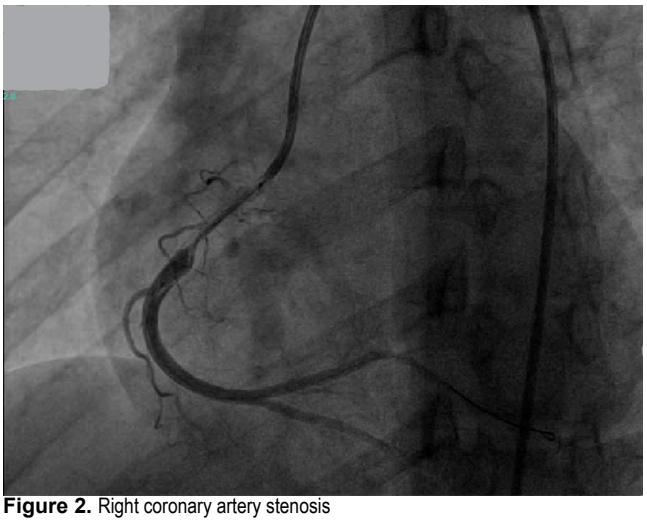

Figure 2. Right coronary artery stenosis

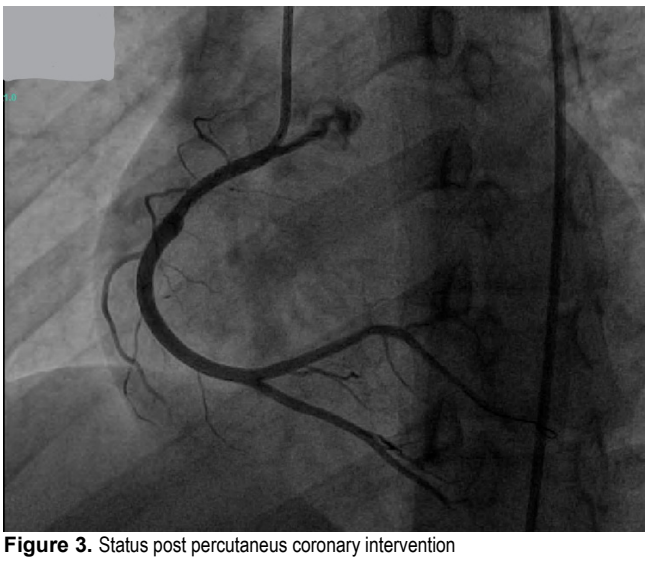

Figure 3. Status post percutaneus coronary intervention

stenosis, cardiac trauma, pulmonary embolism, tension or pneumothorax, aortic dissection, esophageal reflux or spasm, musculoskeletal and anxiety disorders. A primary diagnosis of ACS NSTEMI is considered, other differential diagnoses that needs further investigation are myopericarditis and coronary spasm. A myopericarditis can cause chest pain characterized as sharp, pleuritic, retrosternal, radiating to neck, shoulder, arms and trapezius ridge. It is typically worsened by lying down and may have associated symptoms of dyspnea, cough, and occasional hiccups. An antecedent history of viral illness is common, a physical finding of pericardial friction rub may be appreciated and can also cause modest release of troponin I. A coronary spasm is common in younger age group. It is also characterized as typical angina and can cause troponin I elevation. Based on 2015 ESC guidelines for the management of acute coronary syndrome in patients presenting without persistent ST-segment elevation, an invasive management is warranted in very-high-risk criteria of recurrent or ongoing chest pain refractory to medical treatment. She therefore, underwent invasive coronary angiography with intent of revascularization via the right femoral artery using 7F sheath.

A normal left anterior descending and left circumflex artery were seen. However, there was a tapering stenosis at the proximal to mid segment of the right coronary artery (Figure 2). A microport ballon jive 2.0/15mm was positioned and was later inflated up to 16 atmospheres with 80% residual stenosis hence a firebird 2 microport stent 3.0/29mm was deployed, up to 16 atmospheres with 30% residual stenosis and post dilation was done with quantum Boston scientific balloon 3.75/8mm and inflated up to 12 atmospheres (Figure 3). After the procedure there was relief of chest pain. The risk of restenosis and the importance of dual antiplatelet for 12 months were explained. In addition to aspirin the following options together with the advantage and disadvantage of each drug were offered; prasugrel or ticagrelor, desensitization with clopidogrel or cilostazol. The first option has better platelet inhibitory effect with a faster onset but carries a higher cost. There was reluctance to retake clopidogrel due to prior angioedema. She decided to use cilostazol which is more affordable but have been only use for aspirin, clopidogrel hypersensitivity and in treating high risk group for coronary in-stent stenosis in small studies. She was discharged improved and given the following take home medications; aspirin 80mg/tab one tablet once a day, cilostazol 100mg/tab one tablet twice a day, atorvastatin 80mg/tab one tablet once a day, carvedilol 6.25mg/tab one tab twice a day and enalapril 2.5mg/tab one tab twice a day, cetirizine 10mg/tab one tab once a day and prednisone 30mg/tab one tab twice a day (1mg/kg/day) for five days. On follow up patient was able to return to activities of daily living and completed a six-month course of cilostazol with no complications

Discussion

The prevalence of acute myocardial infarction is inversely related with age. Only a number of case reports on teenage patients with behcets syndrome and nephrotic syndrome were seen.[5-6] In addition acute myocardial infarction in the line of twenties is also rare especially, as a female with protective hormonal effects.[7] In a retrospective review done by Arnold AZ et al.(1998) risk factors for coronary artery disease in these age group of women were hypertension, hypercholesterolemia, diabetes mellitus, familial coronary artery and smoking.[8] In our patient the only risk factor is a maternal history of premature coronary artery disease which caused a delay in the diagnosis and treatment. In a study done by Chandrasekhar J. et al. (2018) regarding current perspective of acute myocardial infarction in young women, the delay and undertreament are due to suboptimal awareness and sociocultural factors in both sides of the physician and patient.[9]

The diagnosis of NSTEMI was established with a 12LECG and troponin I. A dual antiplatelet of aspirin and clopidogrel were started. However she had angioedema after taking clopidogrel, the incidence of hypersensitivity is 6% while angiodema was reported in a few cases.[10-11] The known alternatives are prasugrel and ticagrelor. However there are reports of cross reactivity and angioedema with both drugs.[12-14] We decided to use cilostazol which is more affordable and have been use for aspirin, clopidogrel hypersensitivity and in treating high risk group for coronary in-stent stenosis in small studies.[15-17]

A coronary angiogram was done which differentiated angiographically normal coronary arteries over obstructive coronary artery disease.[18] An obstructive coronary artery disease is mostly due to accelerated atherosclerosis. However our patient is a non smoker, non hypertensive, non diabetic with normal body mass índex and lipid profile which makes the case peculiar.[19-21] Nonetheless the decision to do percutaneous coronary intervention was based on the symptom and age of the patient. We recognize that the information in this approach is lacking due to under representation and futher studies should be done in clinical trials, to guide us in treating this kind of patients.

Conclusion

A delay in diagnosis and management may happen in a very young Filipino female presenting with acute chest pain and no comorbidities. A family history of premature coronary artery disease is a clinical marker of risk for acute coronary syndrome. A genetic testing may further establish this relationship. The clinical presentation of typical angina, T-wave inversions on inferior leads, highly abnormal cardiac troponin and very-high-risk criteria of recurrent or ongoing chest pain refractory to medical treatment warrants an immediate invasive strategy of coronary angiogram with revascularization. An angioedema secondary to clopidogrel hypersensitivity is a rare complication and can cause reluctance in a patient. The financial capacity to maintain long term treatment of dual antiplatelet should be considered for better compliance. A shared decision making between the physician and patient is a valuable tool in facing these challenges.

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