

## ABSTRACT

### INTRODUCTION:

Left main stem (LMS) disease is associated with significant morbidity and mortality. The classical presentation of LMS includes classical ischaemic chest pain and other prodromal symptoms, however the diagnosis is rather difficult and overlooked in women especially in younger age group due to its rare occurrence as they tend to have atypical presentation. We present a case of a young lady diagnosed as LMS Disease.

### CASE REPORT:

A 21-year-old healthy lady presented with history of left sided pricking chest pain for two weeks which aggravated on movement and breathing. On admission, she developed palpitation, vomiting and failure symptoms. She was tachypnoeic with poor oxygen saturation. Electrocardiogram (ECG) showed ST elevation on aVR with widespread ST depression at leads I, II, III, aVF, V2-V6. Bedside Echocardiography showed global hypokinesia. She was diagnosed as Left Main Stem Disease with Left Ventricular Failure and started on dual antiplatelet, anticoagulant and diuretics. She was referred to Institut Jantung Negara (IJN), Percutaneous Coronary Intervention (PCI) done and two stents inserted over ostial Left Main Coronary Artery (LMCA) and Right Coronary Artery (RCA). She is currently on dual antiplatelet therapy.

### DISCUSSION:

The etiology of LMCA Stenosis can be due to atherosclerotic or non-atherosclerotic. Atherosclerotic is caused by plaque formation and special anatomy and histology differences in women population may precipitate its formation. It is due to smaller vessel caliber for both RCA and LMCA in women. This anatomy variance affects the physiological mechanism when higher pressure in aorta can cause intimal injury leading to ostial stenosis. Coexistence of LMCA and RCA occlusion are higher in younger women population approximately 63%.

### CONCLUSION:

Diagnostic dilemma in young women with subtle chest pain can be decreased with different approach. ECG and Bedside Echocardiography are the essential modalities to aid in diagnostic evaluation which help in early treatment.

## CASE REPORT

A 21-year-old healthy lady presented with history of left sided pricking chest pain for two weeks which aggravated on movement and breathing associated with palpitation, presyncopal attack, and vomiting. One day prior to admission, she developed failure symptoms and reduced effort tolerance.

Upon arrival to Red Zone of Hospital Sultanah Nur Zahirah, she was found tachypneic with poor oxygenation requiring oxygen supplementation. Physical Examinations revealed fine crepitations over bilateral lung fields up to midzone.

ECG showed ST elevation on aVR with widespread ST depression at leads I, II, III, aVF, V2-V6. Her chest radiograph showed overload features with cardiomegaly. Bedside Echocardiography showed global hypokinesia. Her cardiac enzymes are also raised. She was diagnosed as Left Main Stem Disease with Left Ventricular Failure and started on dual antiplatelet, anticoagulant and diuretics.

She was referred to Institut Jantung Negara (IJN), Percutaneous Coronary Intervention (PCI) done and two stents inserted over ostial Left Main Coronary Artery (LMCA) and Right Coronary Artery (RCA). She is currently on dual antiplatelet therapy for 1 year.

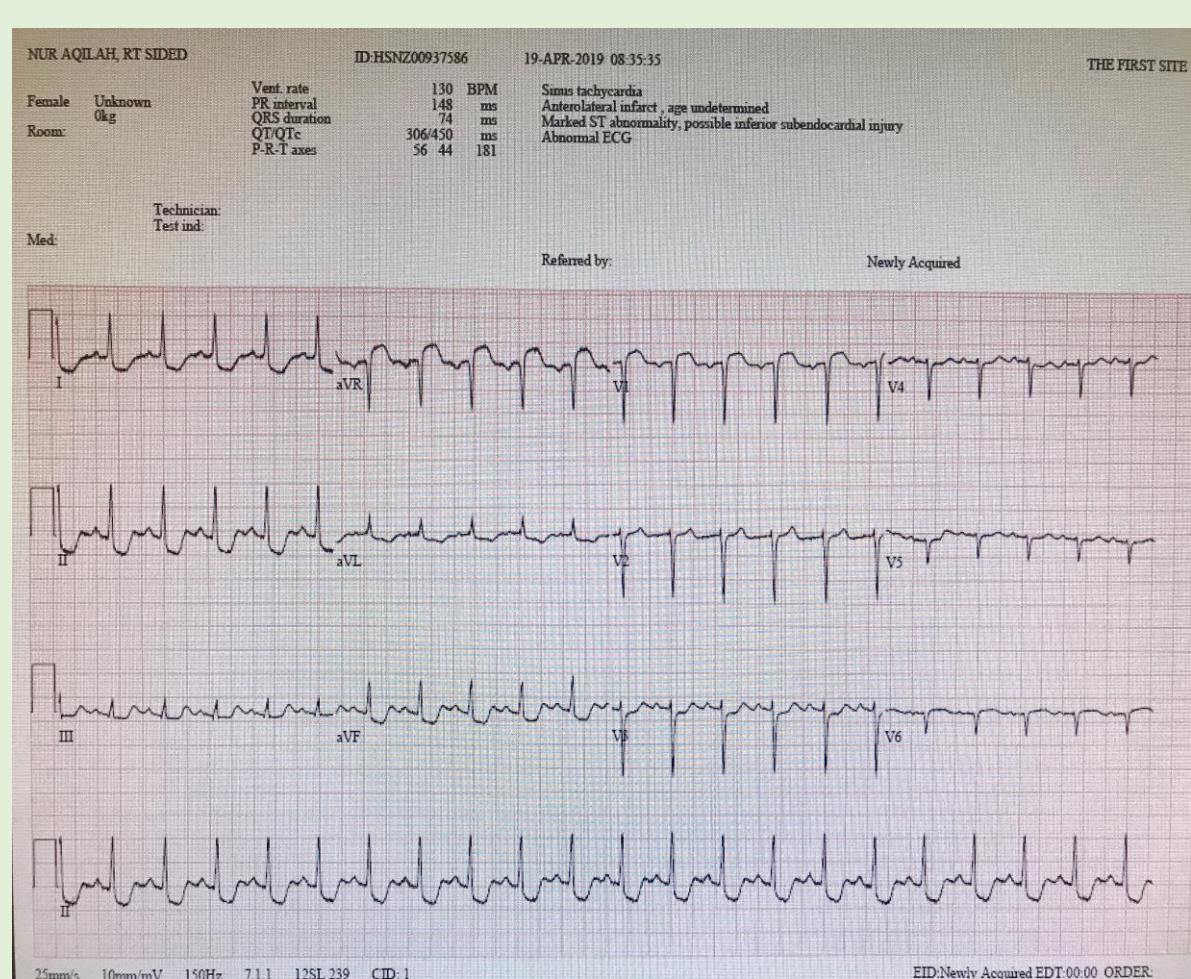


Figure 1a ECG showing ST elevation on aVR with widespread ST depression at leads I, II, III, aVF, V2-V6 upon admission.

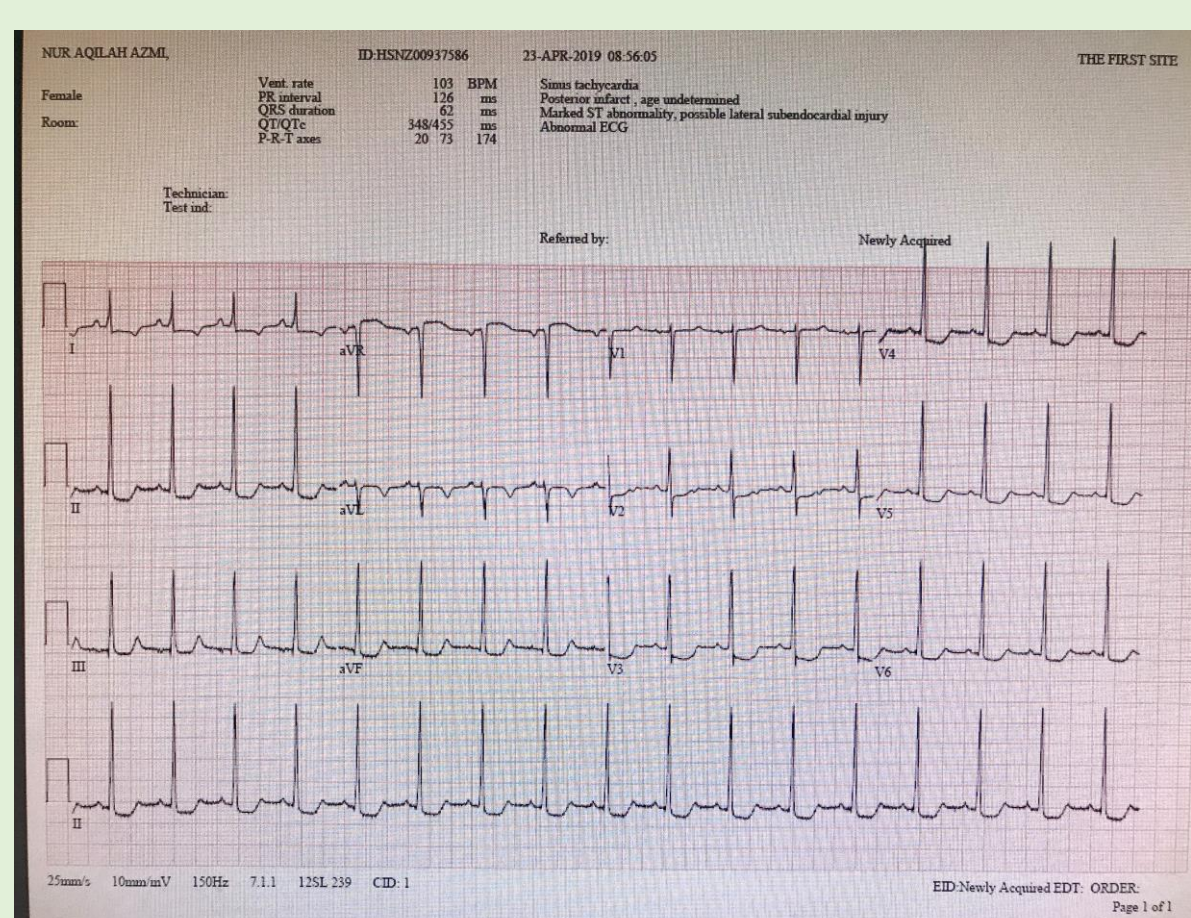


Figure 1b ECG resolution of ST Elevation over aVR and persistent widespread ST depression at leads I, II, III, aVF, V2-V6 upon discharge.

## DISCUSSION (CONT)

There are reasonable physiological mechanisms to explain the pathology of this coexistence. Considering the differences in anatomy and histology of these two vessels (RCA and LMCA), women population were more prominent in both ostial LMCA and RCA Stenosis<sup>2</sup>.

Anatomically, women have smaller LMCA compared to men regardless of body surface area<sup>1</sup>. The ostium of the LMCA are within the aortic wall and are subject to conditions that affect the aorta<sup>1</sup>. Histologically the LMCA ostium lacks adventitia and has considerable smooth muscle and elastic tissue<sup>1</sup>. In certain circumstances, the higher mean arterial pressure in the aorta may predispose to higher incidence of trauma and intimal injury that leads to atherosclerotic plaque formation<sup>1</sup>.

This rare angiographic entity puts women population at high risk of myocardial infarction and fatality<sup>1</sup>. Medical management has little role to play for ostial stenosis<sup>1</sup>. Revascularization, either by surgery or by PCI is the treatment of choice<sup>1</sup>.

In the present day, young women had a lower probability of receiving guideline-based therapies and interventions than young men, including lipid-lowering medications, nonaspirin antiplatelet agents, coronary angiography, and revascularization<sup>4</sup>. Thus, more data are needed to optimize prevention strategies and promote cardiovascular health among young women<sup>4</sup>.

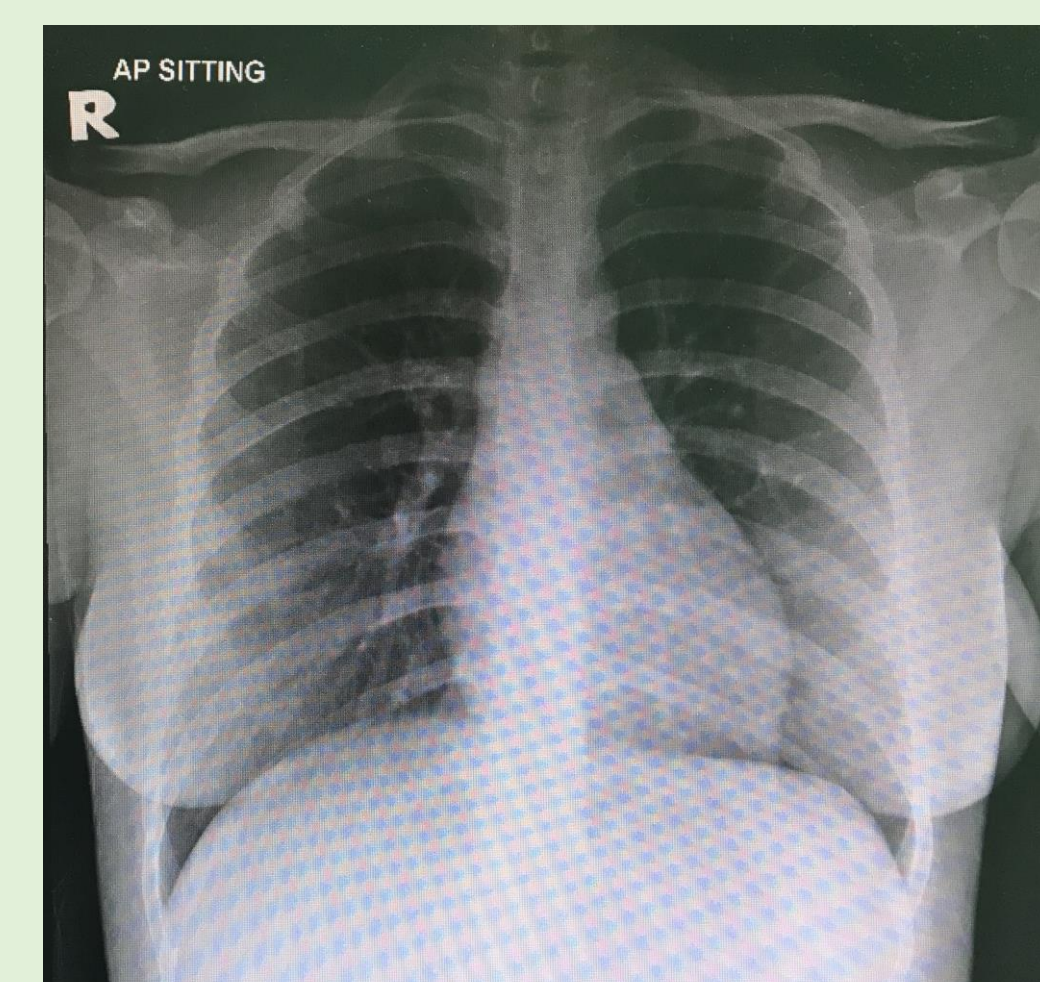


Figure 2 CXR showing overload features with borderline cardiomegaly

## CONCLUSION

Diagnostic dilemma in young women with subtle chest pain can be decreased with different approach. ECG and Bedside Echocardiography are the essential modalities to aid in diagnostic evaluation. The clinical and angiographic profile of these younger women population may represent a distinct clinical entity. Emergency physicians need to be aware of this rare condition and have a high index of suspicion so that early diagnosis can be made, followed by effective treatment, in order to improve the prognosis in these patients and prevent the unfavourable course of this condition. Prevention efforts are important to include the overlooked risk factors that are relevant for young women.

## REFERENCES

1. Sunil Kumar Srinivas, Bharathi Sunil, Prabhavathi Bhat et al, Incidence, Predictors, Clinical Profile, Management And Outcome Of Patients With Isolated Left Main Coronary Artery Ostial Disease, Indian Heart Journal, April 2018, <https://doi.org/10.1016/j.ihj.2017.06.008>
2. Yildirimturk, M Cansel, R Erdim et al, Coexistence of Left Main and Right Coronary Artery Ostial Stenosis: Demographic and Angiographic Features, International Journal of Angiology, March 2011, doi: 10.1055/s-0031-1272550
3. Dr Ed Burns, LMCA Occlusion : ST Elevation in aVR, Life in the Fastlane, March 2019
4. Viola Vaccarino, Myocardial Infarction in Young Women, AHA Journal, February 2019, <https://doi.org/10.1161/CIRCULATIONAHA.118.039298>
5. Chandrasekhar J, Gill A, Mehran R, Acute Myocardial Infarction in Young Women : Current Perspective, International Journal of Women's Health, September 2017, <https://doi.org/10.2147/IJWH.S107371>

## INTRODUCTION

Left Main Coronary Artery (LMCA) disease remains an important risk factor for compounded mortality and morbidity at all stages of diagnosis and treatment of Coronary Artery Disease (CAD)<sup>1</sup>. Approximately 2.5–17.5% of patients undergoing cardiac catheterization was found to have significant LMCA Stenosis with various presentations<sup>1</sup>. In majority of cases there is coexisting disease in multiple coronary vessels which also involve the Right Coronary Artery (RCA)<sup>1</sup>.

Few cases reported that patients with isolated coronary ostial stenosis are mostly young to middle-aged women who present with severe symptoms of short duration and a low incidence of coronary risk factors<sup>1</sup>. Hospitalization for Myocardial Infarction (MI) in young women is also increased, from 21% in 1995 to 1999 to 31% in 2010 to 2014<sup>4</sup>.

The incidence of metabolic risk factors including diabetes mellitus, hypertension and hyperlipidemia and consequence of contemporary lifestyles and increasing prevalence of obesity in women are less significant as compared to men population. However, female-specific risk factors, such as polycystic ovary syndrome, premature menopause, or a history of pre-eclampsia, are often overlooked when risk is estimated in women<sup>4</sup>. Hence, we would like to present a case of coexistence of LMCA and RCA ostial stenosis in a young lady presented with atypical chest pain.

## DISCUSSION

The etiology of LMCA Stenosis could be atherosclerotic or non-atherosclerotic<sup>2</sup>. Non-atherosclerotic could be secondary to radiation, syphilitic or rheumatoid arthritis, Takayasu's arteritis, aortic valve disease, aortic valve replacement, Kawasaki disease, and injury following coronary intervention<sup>2</sup>. However, atherosclerotic remains the most frequent cause of LMCA Stenosis approximately 2.5%-17.5%<sup>2</sup>. In those middle-aged women who experienced early menopause, the abrupt decrease in estrogen secretion may play a role in the pathogenesis of premature atherosclerosis<sup>1</sup>.

The occurrence of RCA ostium stenosis is more often than the left approximately 4.9%<sup>2</sup>. Nevertheless, the coexistence of RCA and LMCA stenosis is higher roughly 22.1%<sup>2</sup>.

Although this lady does not perceive typical angina pain, high index of suspicion is important and to look hard for other signs such as the prodromal symptoms and to proceed with cardiac evaluation (ECG, Bedside Echocardiography and cardiac enzymes) to support the clinical suspicious.