

LEARNING CORNER



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NOT EVERY Q WAVE IS AN INFARCT- STEPWISE APPROACH IN A CASE OF CARDIAC AMYLOIDOSIS

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SUMMARY

We are presenting a case of 65 years old lady who presented in clinic with shortness of breath, pedal and periorbital swelling and lethargy for 1 month. Her initial electrocardiogram (ECG) raised the suspicious of a missed myocardial infarction but detailed workup confirm the diagnosis of multiple myeloma with cardiac amyloidosis. The case highlight the importance of considering differentials of various ECG pattern mimicking infarcts and correlating them clinically and with other diagnostic modalities.

CASE DESCRIPTION

A 65 years old lady, known case of hypertension and diabetes presented with shortness of breath, pedal and peri-orbital swelling and generalized weakness for one month. Clinical examination shows blood pressure of 100/60mmHg, pulse 105bpm and oxygen saturation 96. On general physical examination we found raised JVP, pitting pedal edema, ascites, and peri-orbital puffiness. Precordial examination reveals a systolic murmur at left parasternal border. Her electrocardiogram is shown in Figure 1.

QUESTION 1

What is the initial suspected diagnosis based on her ECG findings?

- Anterior wall Myocardial infarction with late presentation
- Pericardial effusion with tamponade
- Non ischemic Cardiomyopathy
- Restrictive Cardiomyopathy
- Constrictive pericarditis.

QUESTION 2

Patients Echo after the ECG showed no segmental wall motion abnormalities. There was moderate left ventricle hypertrophy (as shown in Figure 2a). Based on ECG and given echo finding what additional Echo findings can be seen?

- Septal bounce
- Normal diastolic function
- Bi-atrial enlargement
- Dilated left ventricle
- Pericardial effusion

QUESTION 3

What is the most likely diagnosis based on clinical sign and symptoms, ECG and echocardiography findings?

- Hypertrophic cardiomyopathy (HCM)
- Cardiac Amyloidosis
- Constrictive pericarditis (CPC)
- Cardiac sarcoidosis
- E. Hypertensive heart disease

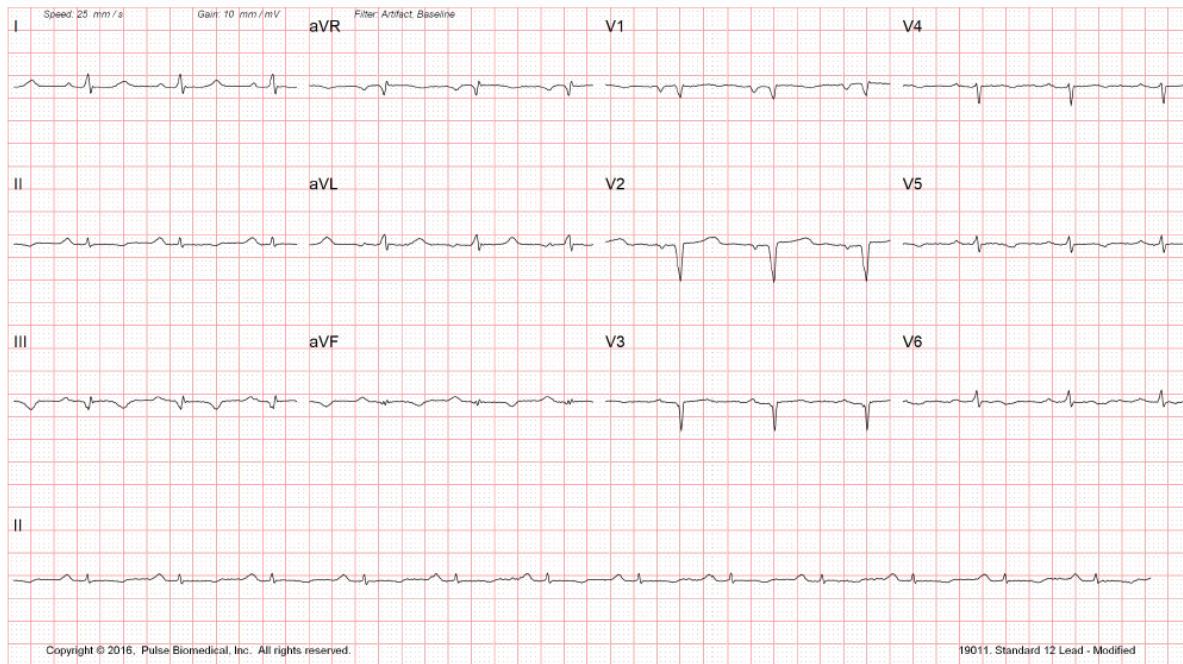


Figure 1: Electrocardiogram

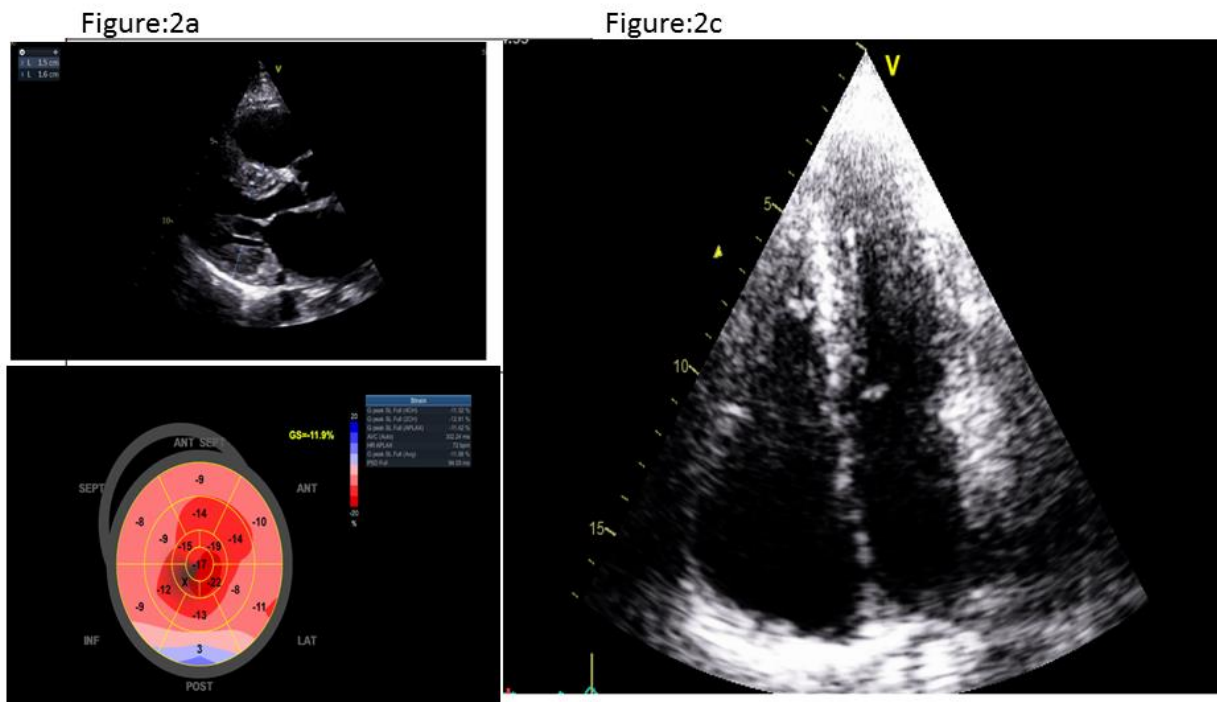


Figure:2b

Figure 2: PSAX view showing moderate LVH(a), average global longitudinal strain(GLS) of -12(b), apical four chamber view showing dilated right and left atria

ANSWERS

- **Question 1:** The correct answer is option A. Anterior wall MI with late presentation. Her ECG

shows Q waves in lead V1 to V3. In the presence of diabetes, hypertension, and old age the first suspected diagnosis is anterior wall MI with late presentation however the other significant finding in

the ECG is low voltages therefore further workup is required to rule out other possible diagnosis. Therefore her transthoracic echocardiogram was done.

- **Question 2:** The correct answer is option C. Bi-atrial enlargement is the right answer. As her ECG shows infarct pattern but there is no S.W.M.A therefore it is a pseudo infarct pattern. This raised the suspicion of some myocardial disease in which bi-atrial enlargement is a diagnostic echocardiographic parameter. Her Echo did shows moderate bi-atrial enlargement (Figure 2c). Left ventricle hypertrophy is not a classical echocardiographic finding in CPC and DCMP. Similarly with moderate LVH possibility of normal diastolic function is very low. We did not find pericardial effusion. There was moderate to severe tricuspid regurgitation. Her global longitudinal strain was -11% as shown in Figure 2b.

- **Question 3:** The correct answer is option B. Cardiac Amyloidosis is the right answer. She presented with signs and symptoms of heart failure, a low voltage ECG with pseudo infarct pattern. Echocardiographic findings of normal Ejection fraction with moderate left ventricle hypertrophy, bi-atrial enlargement, Grade III diastolic dysfunction and findings in global longitudinal strain (GLS) was strongly suggestive of cardiac amyloidosis. The cardiac MRI was available due to some technical issues meanwhile she was seen by hematologist and her protein electrophoresis confirmed M spike. Her bone barrows confirm the diagnosis of multiple myeloma. She is currently on chemotherapy and anti-heart failure drugs for her cardiac amyloidosis.

REFERENCES

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