CASE REPORT

UNEXPECTED SUDDEN DEATH IN A YOUNG MAN WITH MYOPERICARDITIS

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A 31 years man was referred by general practitioner (GP) with chest pain preceded by sore throat a week ago. Electrocardiogram was suggestive of pericarditis and Troponin and inflammatory markers were elevated. Echocardiogram showed small pericardial effusion with normal biventricular size and function, and no regional wall motion abnormalities (RWMA). A clinical diagnosis of myopericarditis was made. Patient was in good clinical condition so he self-discharged before cardiac MRI. Two days later he died of cardiac arrest. His post mortem confirmed the diagnosis of myopericarditis. He died despite of absence of known poor prognostic features of Myopericarditis.

Keywords: Myoepicarditis, sudden death, unexpected.

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INTRODUCTION

Myocarditis refers to inflammation of the heart muscles resulting from exposure to either external antigens (such as viruses, bacteria, parasites, toxins or drugs) or internal triggers such as autoimmune response against self-antigens.[1]

Viral infection remains the most common cause for myocarditis and indeed, more than 20 viruses have been associated with myocarditis and currently parvovirus B19 and human herpesvirus 6 are the commonest.[2]

Myocarditis is considered a common condition although exact incidence of myocarditis is unknown due to lack of definite diagnosis in many cases. In clinical case series of sudden death, myocarditis often is the third leading cause after hypertrophic cardiomyopathy and coronary artery disease.[3]

In autopsy studies of young adults, myocarditis is responsible for 4–12% of sudden deaths. Predicting prognosis remains a challenge in some cases of myocarditis as highlighted in this case report.

CASE

A 31 years old man presented to his GP with chest pain radiating to neck and left arm. He had few brief episodes of pain for preceding couple of days. He also noticed worsening of pain with breathing but not related to exertion. GP referred to A&E due to abnormal ECG. He had a sore throat with fever a week prior to these symptoms. He was otherwise a healthy man with no known medical problems and had an office job. He was non-smoker and non-addict. There was no family history of premature heart disease or sudden unexpected deaths. On presentation his heart rate was 100 bpm, blood pressure was 145/83 mmHg, temp 37.4 ºC and respiratory rate of 16/min with SaO_2 97% on room air. His systemic examination was unremarkable.

ECG showed sinus tachycardia with ST changes and PR depression in multiple leads. Blood tests revealed elevated inflammatory markers, white cell count 17.4×10^3/ul with Neutrophils 13.7×10^3/ul and C-reactive protein 141 but they all settled in subsequent few days. Chest Xray was normal. Echocardiogram showed small pericardial effusion, normal biventricular size and function and no regional wall motion abnormalities. Troponin was elevated at 6.3 ug/L.

A clinical diagnosis of probable myopericarditis was made and inpatient cardiac MRI was advised for diagnosis and to assess prognosis.

He was commenced on Ibuprofen and Bisoprolol in addition to Lansoperazole. Pt was completely asymptomatic while waiting for MRI as inpatient so he decided to discharge himself against medical advice.

Two days after discharge, patient developed sudden cardiac arrest at home. His partner started cardiopulmonary resuscitation (CPR) followed by prolonged attempt of resuscitation by ambulance crew but he could not revive. His initial rhythm was pulseless ventricular tachycardia.

Due to lack of definitive diagnosis, his post mortem was carried out which confirmed the diagnosis of myocarditis. On post mortem, LV was moderately dilated with oedema and congestion of outer anterior wall and lymphocytic infiltrates on histology.

DISCUSSION

Myocarditis has a wide-ranging array of clinical presentations ranging from asymptomatic electrocardiographic or echocardiographic changes to fulminant forms leading to heart failure,

haemodynamic collapse, malignant arrhythmias and sudden cardiac death.[1]

Presentation of myocarditis may vary with underlying cause as well. The classic Dallas criteria required histological evidence of myocarditis for diagnosis. However, because of less common availability and low sensitivity of endomyocardial biopsy (EMB), a hybrid clinical, laboratory and imaging criteria is used in clinical practice for diagnosis without necessarily resorting to biopsy in all cases.[4]

According to one classification, a patient with histologic confirmation is labelled "definite myocarditis." A patient presenting with acute cardiovascular syndrome is classified as "probable acute myocarditis" if one of the following is present: (1) an unexplainedrise in cardiac troponin; (2) ECG changes suggestive of myocardial injury; or (3) abnormal cardiac function on echocardiogram or CMR. An asymptomatic patient with these findings would be classified as "possible subclinical acute myocarditis" if a recent trigger for myocarditis, such as a recent viral illness, was present and other causes of acute cardiac disease were excluded. A number of features have been identified as poor prognostic markers. A QRS width greater than 120 milliseconds and Q waves are associated with increased risk of cardiac death and need for heart transplantation.[5]

Serum concentrations of certain biomarkers like cardiac troponins, creatine kinase-MB, creatinine, lactate and aspartate transaminase (AST) are associated with increased in-hospital mortality.[1,6] Poor left ventricular function and or right ventricular function heralds a poor prognosis.[1]

CMR can quantitate regions of myocardial damage and possibly predict the risk of cardiovascular death and ventricular arrhythmias after myocarditis.[7]

In contrary to the above evidence, Miyake CY *et al* demonstrated in their study in young adults and children thatdevelopment of serious early ventricular arrhythmias is not related to LV function, ECG changes, C-reactive protein, lactate or cardiac biomarkers. It has also been observed that patients with silent myocarditis, who recover, can later on present with life threatening ventricular arrhythmias.[8,9]

Hence predicting prognosis in acute myocarditisn remains a challenge. Our patient is an example of those who did not have electrocardiographic or echocardiographic evidence of poor prognostic features but still had unexpected arrhythmic sudden death.

Key Points/ Take Home Messages:

- Myocarditis can present like acute coronary syndrome.
- A probable diagnosis can be made clinically based upon electrocardiographic, laboratory parameters and cardiac imaging but EMB is required for definite diagnosis.
- Sudden cardiac death in myocarditis is still unpredictable.

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