

A Rare Case of Broken Heart Syndrome Takotsubo Cardiomyopathy with Polyserositis with Septic Shock

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Abstract

A 19 years old female came to ED with c/o chest pain with uneasiness, intermittent sweating, epigastric pain and weakness since one day. Patient had no any pre-existing comorbidity and not on any regular medication. On examination Patient was in shock haemodynamically with ECG showed normal sinus rhythm. 2D echo suggested global hypokinesia with LVEF 30%. Ultrasound whole abdomen revealed Gall Bladder wall edema with small amount of free fluid in peritoneal cavity. X-ray chest suggested B/L ground glass opacities with mild B/L pleural effusion.

Keywords: Cardiomyopathy; Broken Heart Syndrome; Polyserositis; Sepsis; Septic Shock.

Introduction

Cardiomyopathy: is a group of diseases that affects the heart muscle. Initially there may be few or no symptoms but as the disease worsens shortness of breath, feeling tired and swelling of legs may occur due to onset of heart failure. An irregular heart beat and fainting may occur. Affected patients are at an increased risk of sudden cardiac death. Types of cardiomyopathy include as following:

- A. Hypertrophic cardiomyopathy:** in which the heart muscles enlarges and thickens.
- B. Dilated cardiomyopathy:** in which the ventricles enlarges and weakens.

C. Restrictive cardiomyopathy: in which the ventricle stiffens.

D. Arrhythmogenic right ventricular dysplasia: is a type of non ischemic cardiomyopathy that primarily involves the right ventricle and is characterized by hypokinetic areas involving the free wall of ventricle with associated arrhythmias often originating in the right ventricle.

E. Takotsubo cardiomyopathy: also known as Broken Heart Syndrome, is a type of non ischemic cardiomyopathy in which there is sudden temporary weakening of muscular portion of heart. It usually appears after a significant stress either physical or emotional. Examples of physical stressors include sepsis, shock, pheochromocytoma.

Examples of emotional stressors include bereavement, divorce or loss of job.

Polyserositis: is defined as inflammation of various serous tissues of body found over lungs (pleura), heart (pericardium), abdomen (peritoneum).

Sepsis and Septic Shock: Sepsis is the systemic

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response to infection characterized by two or more of the following criteria caused by an infection:

- Temperature: >38.3 degree C or <36 degree C
- Heart rate: >90 beats per minute
- Respiratory arte: >20 breaths per minute
- WBC's: <4 or >12 x 10⁹/L
- Altered mental status
- Blood glucose >8.3 mmol/L

Severe Sepsis: is defined as sepsis with dysfunction of one or more organs, or the presence of tissue hypoperfusion.

Septic Shock: is defined as condition of ongoing hypoperfusion despite initial fluid challenge i.e, 20 ml/kg bolus of crystalloid

- Mean Arterial Pressure <65 mmHg or systolic blood pressure <90 mmHg
- A reduction of >40 mmHg of normal systolic blood pressure
- Lactate >4 mmol/L

Case Study

A 19 year old unmarried female came to ED with c/o chest pain with uneasiness, intermittent sweating, epigastric pain and weakness since one day. Patient had no any pre-existing comorbidity and not on any regular medication. On examination, patient was alert, conscious, oriented and looking mildly pale with following vitals:

Bp: 70/40 mmHg, Pulse: 98/minute, Spo2: 99% on facemask @ 5 litre/min, Respiratory Rate: 20/min, Temperature: afebrile. ECG showed normal sinus rhythm. Random blood sugar: 166 mg/dl. On Auscultation: mild B/L wheeze over lower zones present. On Per Abdomen examination: epigastric tenderness present with bowel sound present. Urogenital examination was insignificant. Last menstrual period was one week back.

Attendants gave history that the girl was single

child living with her parents. She hadn't any drug allergy and not on any medication on regular basis. She had lost her mother 4 days back who was bedridden and on medication for lung cancer since long time.

Primary treatment started immediately. Blood samples for relevant investigations sent. Foleys catheterization done under all aseptic precautions. Chest x-ray, Ultrasound whole abdomen and 2-D Echocardiography was planned to be done. Patient was admitted and discharged after 10 days in stable condition.

Course in the Hospital and Outcome

Treatment with antibiotic, Inotropic support, fluid therapy and other symptomatic supportive management had been started. 2-D Echocardiography done which showed : global hypokinesia with left ventricular ejection fraction 30%, both atrium/ventricles normal in size, no valvular pathology, no mitral/aortic regurgitation, no aortic stenosis, normal right ventricular function. Ultrasound whole abdomen showed Gall Bladder wall edema and small amount of free fluid in peritoneal cavity. Chest x-ray was suggestive of bronchovascular markings with ground glass opacities in mid and lower lung zones with bilateral mild pleural effusion.

Under aseptic precautions and local anaesthesia arterial line and right intra jugular venous line secured and patient was admitted in Intensive care unit. Treatment with antibiotic, inotropic support, fluid therapy and other symptomatic supportive management continued.

Patient had responded well on given treatment and repeat 2-D Echocardiography after 5 days showed normal chambers with left ventricular ejection fraction 55%. All laboratory parameters were insignificant and was normal. Repeat chest x-ray appears normal after 5 days and patient started maintaining saturation of 99% on room air. Patient was discharged after 10 days in stable condition.



Discussion and Therapeutic considerations

Takotsubo Cardiomyopathy presents like Acute Coronary Syndrome and is characterized by transient apical ballooning of left ventricle in the absence of coronary artery stenosis. The disease was first documented in Japan and the Takotsubo means "Octopus pot". Females are affected more than men and in 90% cases, women are involved. Majority of them are post menopausal and the mean age is 68 years. The true prevalence is still uncertain. It presents with complaints like chest pain, shortness of breath, arrhythmias i.e irregular heart beats and cardiogenic shock may also occur with this syndrome. In order to diagnose the condition we can do an ECG, blood test, angiogram, echocardiogram, cardiac magnetic resonance scan, left ventriculogram and chest x-ray. ECG may show normal sinus rhythm or sinus tachycardia or non specific ST and T wave changes. Blood samples test will be normal and there could be mild increase in cardiac biomarker levels (Troponins). There will be no signs of heart muscle damage. Echocardiogram and Angiogram will not show any signs of blockages in coronary arteries. Left ventriculogram will show transient apical ballooning of left ventricle.

Treatment may include : ACE inhibitors, Diuretics, Beta blockers, Inotropes, Fluid management and Long term stress management. The case discussed above managed well with the above mentioned treatment and the patient got discharged after 10 days in stable condition.

Conclusion

Why should an emergency physician be aware of Takotsubo Cardiomyopathy?

As we discussed above that Takotsubo Cardiomyopathy mimics Acute Coronary Syndrome. Number of acute coronary cases has been increased comparatively as earlier because of more fat rich unhealthy diet, lack of exercises, smoking, drinking, increased comorbidities and others modern life induced reasons, there will be a high chance of misdiagnosis of Takotsubo Cardiomyopathy. An emergency physician must know about Takotsubo Cardiomyopathy for better approach. About 15% of people who have had suffered from this cardiomyopathy before, can have another episode and stressful event can be completely different each time. There are some possible complications, for example: pulmonary edema, hypotension and arrhythmia but all can be treated.

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