

Acute Coronary Syndrome: Is it the Primary Event or a Secondary Phenomenon?

Dear Editor,

Acute coronary syndrome (ACS) is a medical emergency which refers to a group of symptoms that occur due to abrupt rupture of atherosclerotic plaque in the coronary artery. However, there are a lot of other conditions mimicking ACS. We report a rare case of ACS secondary due to takotsubo cardiomyopathy (TTC) in a male patient who had concomitant pneumothorax at presentation.

Case Report

A 72-year-old Chinese man with a medical history of colonic adenocarcinoma presented to the emergency department with sudden onset of dyspnea and chest pain. Chest x-ray revealed a big mass in the right lung and also a large left pneumothorax (Fig. 1a). Electrocardiogram (ECG) showed sinus rhythm with ST segment elevation in the anterolateral and inferior leads (Fig. 1b). Serum troponin I level was also elevated at 5.71 ug/mL. Chest tube

was inserted. However, repeat ECG showed persistent ST segment elevation. Urgent coronary angiography revealed no significant stenosis. Left ventriculogram showed typical features of TTC (Fig. 1c). Echocardiogram also showed similar findings (Fig. 1d). His cardiac function improved gradually with supportive treatment.

Discussion

TTC was first reported in Japan and the Japanese word ‘takotsubo’ means an octopus trapping pot (Fig. 1e). It is also called transient left ventricular apical ballooning syndrome or stress cardiomyopathy. The main features usually shown on left ventriculogram/echocardiogram are transient left ventricular dysfunction causing apical ballooning with compensatory basal hyperkinesis. The ECG changes can mimic ACS and there is elevation of cardiac enzymes in the absence of obstructive coronary artery disease.

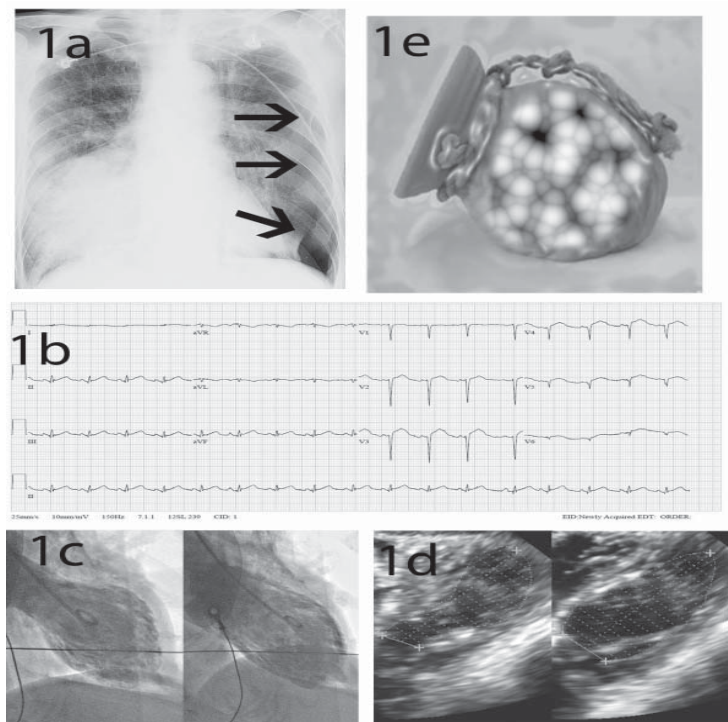


Fig. 1. Investigation findings of patient with concomitant pneumothorax. (a). A large left pneumothorax (black arrows) and a mass in the right lower zone of the lung. (b). ST elevations are shown in both anterolateral and inferior leads of the rest electrocardiogram. (c) and (d). The typical appearance of takotsubo cardiomyopathy in both left ventriculogram are shown; (c) is the subcostal view of echocardiogram and (d) the apical ballooning with basal hyperkinesis. (e) The Japanese octopus trap (takotsubo).

Most cases are triggered by stress, either emotional or physical. Affected individuals are typically postmenopausal women, although young men and women can also be affected. Complete recovery is the norm. However, complications including death have been reported. The mechanisms postulated for TTC are transient stunning of the left ventricular function secondary to excessively elevated serum catecholamine levels.^{1,2} On the other hand, during the literature research, we found some case reports, which showed that ECG changes in pneumothorax resembled that of ACS and those changes subsided after the insertion of chest tube and re-expansion of the lung.^{3,4}

Moreover, a PubMed search of the terms transient left ventricular apical ballooning, takotsubo, stress cardiomyopathy and pneumothorax from the period 1991 and April 2012 was conducted. Only 3 cases of TTC in association with pneumothorax have been reported.

In our illustrated case, ST segment elevation was observed in both the anterolateral and inferior leads in the surface ECG, which is highly suggestive of TTC.⁵ We postulate that the primary event was likely pneumothorax which imposed physical stress to our patient and hence triggered the onset of the TTC, mimicking ACS.

Conclusion

In conclusion, physicians should recognise that TTC may complicate an episode of pneumothorax and mimic ACS even in male patients. The associated ECG changes usually subside after the insertion of chest tube and re-expansion of the lung (although this was not observed for our patient).

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