Editorial for the Manuscript of Zhou and Colleagues
Appearing in This Issue: Pheochromocytoma
and Cardioembolic Events

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Zhou et al (1) reported a case of pheochromocytoma. An obese 43-year-old woman presented with clinical manifestations of ventricular tachycardia, a left ventricular thrombus and elevation of myocardial enzymes followed by embolization. Soon after admission, the patient developed ventricular tachycardia (VT) concomitant with elevated blood pressure about 200 mmHg (systolic). Amiodarone was given to control VT which was controlled by day 8.

ECG showed a Q wave in the inferior and anterior leads and ST-segment elevation in V2-V5 and later, deep negative T wave inversion developed which improved within a few days. On day 2, a large mural thrombus was found in the apical region of the left ventricle (LV) which detached 3 days later and resulted in bilateral occlusion of the distal segment of the femoral arteries. The CT study on day 2 showed a right adrenal mass. The patient had to undergo amputation of both legs. Renal infarction was also observed by CT study.

Pheochromocytoma is rare but if properly diagnosed, most cases can be successfully managed and can be cured surgically. The tragic situation of the present case was due to cardioembolic complications requiring bilateral leg amputation. Though a LV mural thrombus seems to be very rare, the possible complication of pheochromocytoma with a LV mural thrombus and subsequent embolic phenomenon might be expected when dilatation or regional akinesia is present.

Catecholamine-induced cardiomyopathy has been known in pheochromocytoma (2-4). The heart may show a diffuse wall motion abnormality or regional ballooning (5-9) which has been characteristically observed in takotsubo-cardiomyopathy (10-12) and is relatively easily detected by imaging of the heart and also by the serial ECG.

Recently, cases with stress-induced cardiomyopathy associated with apical ballooning of the heart were first reported from Japan and termed, takotsubo cardiomyopathy (10). This type of cardiomyopathy is precipitated by mental and emotional stress and increased levels of circulating catecholamine which are thought to be causative factors. Similarly in pheochromocytoma, myocardial dysfunction is well known to occur and excessive amount of catecholamine is known to induce myocarditis and dysfunction (2-4).

Takotsubo-cardiomyopathy patients may complain of dyspnea, chest discomfort and ECG suggestive of acute myocardial injury. Ventriculography shows typical apical ballooning of LV while angiography shows normal coronary arteries (10). ECG, especially ones with a giant negative T-wave, would be strongly suggestive of takotsubo-cardiomyopathy (10).

In 2007, there was a severe earthquake in Niigata, Japan (Central District) and at that time, takotsubo-cardiomyopathy was found to occur at a very high frequency (12). Soon after the report, we found that this cardiomyopathy might be associated with a LV thrombus within the sites of ballooning, more so than previously expected (13). Apical ballooning is thought to be the result of myocardial stunning and a site with akinesia might be associated with an increased risk of mural thrombus formation. In some patients, a large mural thrombus was found to develop within a few days in takotsubo-cardiomyopathy (14).

de Gregorio et al (15) reviewed case reports of takotsubo-cardiomyopathy. A LV mural thrombus was estimated to occur in 15/600 patients (2.5%) and of these 15 patients with a mural thrombus, cardioembolic complications occurred in 33.3%. However, we analyzed 21 patients with takotsubo-cardiomyopathy and found stroke in 3 (14%), which was a higher incidence (13, 16).

In pheochromocytoma-induced cardiomyopathy, mural thrombus formation has been rarely reported and embolic
events have been found in only a few cases (17, 18). However it would be reasonable to assume that at the site of ballooning, formation of a LV mural thrombus might occur. Since akinesia is reversible, there is an extreme danger of a subsequent cardioembolic event when the wall regains motion.

After diagnosis of characteristic cardiomyopathy, physicians should pay attention to exclude LV mural thrombus formation and when present, prevention of cardioembolic events by anticoagulation is essential.

References


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