Letter to the Editor

we describe the case of a 42 years old woman who came to the Emergency Department for the occurrence of syncope preceded by severe headache, nausea and constrictive retrosternal chest pain occurring after a violent emotional stress. Then she was transferred in our cardiac intensive care unit at the Department of Cardiology of the University of Palermo. The first cardiac and neurological findings were normal. After a few hours there was a recurrence of chest pain with evidence of new onset electrocardiographical changes (ST segment down-slope from V2 to V6 and in D2, D3 and aVF, with high, pointed, symmetrical T waves and a superimposed prominent U wave in the same derivations). Blood Pressure was 140/90 mmHg and heart rate was about 70 b.p.m. Laboratory investigations showed a weak increase of cTnI levels (2.91ng/mL max) and the transthoracic echocardiogram was within normal limits. So, because of the clinical, EKGraphical and laboratory features, a coronary-ventricle angiography was performed and it excluded significant coronary atherosclerotic lesions and wall motion abnormalities, so we did not perform a cardiac stress test. Plasmatic catecholamines were not measured as this is not indicated during stress, because their increase is expected and reasonable. So a beta-blockers therapy was started leading subsequently to a rapid clinical and EKGraphical improvement.

Before patient’s discharge, a cardiac magnetic resonance with contrast was also performed and it did not reveal the presence of areas of delayed enhancement.

The relationship between heart and brain is complex, and conditions that may interfere with the mechanisms regulating these two systems may impair the normal cardiac function.

It is known that catecolaminergic stimulation deeply influences the function of the conduction tissue of common myocardium and it can lead to important EKG changes both in depolarization and in repolarization9).

Moreover a clinical syndrome called Takotsubo cardiomyopathy or stress cardiomyopathy has been recently described and it is characterized by significant and transient left ventricular dysfunction precipitated by a physical or emotional stress2). It is also known that in the course of neurological diseases, such as subarachnoid hemorrhage or ischemic stroke, electrocardiographical and echocardiographical abnormalities may occur mimicking an acute coronary syndrome3-4). In both these conditions coronary angiography excludes the presence of significant coronary lesions; moreover the wall motion abnormalities typically involve wall segments beyond the territory of distribution of a single coronary artery and the increase of markers of myocardial necrosis is usually small and disproportionate compared to segmental wall motion defects8).
So the described case has clinical features suggestive of a stress cardiomyopathy (angina-like pain preceded by a violent emotional stress, de novo ECG abnormalities and absence of coronary artery atherosclerotic lesions) even if it does not show typical wall motion abnormalities.

We believe that this case, even if it does not have all the diagnostic criteria for Takotsubo cardiomyopathy, is the clinical manifestation of the effects of the brain influence on the heart and therefore it may be considered a kind of neurogenic heart disease. In fact this phenomenon could be caused by the strong stimulation of the adrenergic system following an emotion, which can generate such cardiac abnormalities, even without alterations of the coronary arteries. Moreover this is perfectly reversible and enzyme elevation can remain minor as long as the alteration does not expand to the muscle part of the wall.

Probably, like myocardial infarction without ST segment elevation, it can sometimes appear with subclinical defects of left ventricle segmental kinesis.

Therefore it may be argued that stress cardiomyopathies can have a spectrum of clinical presentations broader than currently expected, and that it is necessary to investigate further over the potential pathophysiologic mechanisms and underlay the complex and still widely unknown relationship between the heart and the brain.

References


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