Takotsubo cardiomyopathy following subarachnoid hemorrhage*

Síndrome de takotsubo após hemorragia subaracnoidea

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Abstract

Takotsubo cardiomyopathy corresponds to a syndrome characterized by a transient myocardial dysfunction affecting the left ventricular apex that classically occurs after major physical or emotional stress (also called “broken heart syndrome” or “stress-induced cardiomyopathy”). The author describes the case of a patient with takotsubo cardiomyopathy induced by subarachnoid hemorrhage.

Keywords: Subarachnoid hemorrhage; Aneurysm; Takotsubo cardiomyopathy.

CASE REPORT

A 55-year-old woman presented an episode of sudden and intense migraine with signs of Fisher grade 3 subarachnoid hemorrhage (Figure 1). After digital angiography, which revealed the presence of an anterior communicating aneurysm with 3 mm in diameter, the patient was submitted to endovascular treatment by embolization with platinum microcoils. In the postoperative period, the patient progressed with hemodynamic instability associated with left-sided heart failure and cardiogenic shock, requiring orotracheal intubation, mechanical ventilation, and use of inotrope and diuretic drugs. Electrocardiogram (ECG) revealed lateral ST segment elevation and long QT interval. Cardiac enzyme tests demonstrated slightly high troponin and CPK levels, and echocardiogram showed decreased left ventricular ejection fraction associated with apical akinesia and...
basal hypercontractility (Figure 2). The patient was referred for catheterization which did not revealed any significant ath erosclerotic lesion. Ventriculography confirmed the ballooned appearance of the left ventricle, resembling the shape of an amphora characteristic of the syndrome (Figure 3). In about one week, the clinical condition of the patient progressively improved, the isotropic drugs dose was decreased, and the left ventricular function was recovered.

**DISCUSSION**

Takotsubo syndrome, also called “transient left ventricular apical ballooning”, was described in 1990 by Sato et al.(2). The name of this syndrome refers to the appearance of the left ventricle during end systole at ventriculography and its resemblance with the amphora-shaped octopus trap (corresponding to the Japanese term tako = octopus, tsubo = trap – Figure 4). A multifactorial etiology is probable, but certainly there is involvement of a failure in auto regulation of the myocardial microvasculature, transient coronary vaso spasm and an abnormal response to catecholamines released as a reaction against stress(3). There is a marked predominance (82% to 100%) of this syndrome in women, particularly among those in the premenopausal period, with mean age between 62 and 75 years.

Diagnostic criteria include the ballooning appearance of the ventricle at echocardiography or ventriculography, besides basal segments hypercontraction and alterations of the ST segment and T wave at ECG. In terms of clinical, biological and ECG features(4), the syndrome many times resembles acute myocardial infarction, but myocarditis and drug abuse, such as cocaine are also included in the differential diagnosis. The absence of significant coronary artery disease at cardiac catheterization must suggest the diagnosis of this syndrome and, if suspected, left ventriculography should be performed(5).

The excessive release of catecholamines triggered by physical or emotional stress is proposed as the main underlying mechanism in the pathogenesis of this phenomenon, which in the present case is secondary to subarachnoid hemorrhage. Magnetic resonance imaging is a promising method for the diagnosis and assessment of this new entity, allowing the differentiation between irreversible lesion characterized by late gadolinium enhancement and myo-
Thus, cardiac MRI can assess myocardial viability, constituting a relevant prognostic tool. Generally, it may be said that the prognosis of this disease is good, with complete myocardial contractility recovery after some days/weeks.

**CONCLUSION**

Takotsubo syndrome is an increasingly recognized and diagnosed disease and, with the present case report, the authors highlight that it should be considered in the differential diagnosis of myocardial dysfunction occurring in the context of intracranial hemorrhages. Different imaging methods play a critical role in the diagnosis, and MRI plays a promising role in the assessment of this disease.

**REFERENCES**


