Hypoglycemic Attack: A Rare Triggering Factor for Takotsubo Cardiomyopathy

Key words: Takotsubo cardiomyopathy, hypoglycemic attack, anorexia nervosa

Takotsubo cardiomyopathy is a disorder characterized by transient dysfunction of the apical portion of the left ventricle, with compensatory hyperkinesis of the basal walls, producing ballooning of the apex with systole in the absence of coronary artery disease. Takotsubo cardiomyopathy was first described by Satoh et al (1) in Japan, and the name of the disorder is taken from the Japanese name for an octopus trap (tako-tsubo) that has a similar configuration as to the affected left ventricle. To date, many reports concerning Takotsubo cardiomyopathy have come from Japan (1–4), but some are from non-Asian countries (5, 6). The most remarkable clinical characteristics are that it is much more common in women than in men, and it is also more common in women aged over 60 than those younger than 60, and that the onset of takotsubo cardiomyopathy is associated with preceding acute medical illness or with emotional or physical stress. Frequent chief complaint was chest pain with ST segment elevation in ECG especially in precordial leads, mimicking acute coronary syndrome. Although the pathogenesis of this syndrome is not clear at present, myocardial ischemia due to cathecolamine-induced microvascular spasm or neurogenic stunned myocardium might be involved in the mechanism.

Ohwada et al (7) reported in this issue of the journal for the first time 3 young female patients with anorexia nervosa who showed acute left ventricular dysfunction similar to takotsubo cardiomyopathy after hypoglycemic attack. According to the criteria of the syndrome described in earlier reports (1) reversible wall motion abnormalities at the left ventricular apex extending beyond one coronary artery distribution, (2) the absence of obstructive epicardial coronary artery and (3) electro-cardiographic abnormalities resembling acute myocardial injury, strictly to say, no patients met all of the criteria, because no one undertook coronary arteriography at the acute phase. However, one of them 17-year-old female, could be diagnosed as takotsubo cardiomyopathy, based on serial changes in ECG, abnormal apical wall motion by echocardiography, slight elevation of CK-MB, and nuclear cardiographic finding of marked perfusion-metabolic mismatches. The remaining 2 showed ECG abnormality and slight elevation of CK-MB without evidence of left ventricular hypokinesis similar to the syndrome. Moreover the lack of uptake defect of I-123-metaiodobenzyl-guanidine imaging suggests that the remaining 2 patients are probably untypical cases of takotsubo cardiomyopathy.

In the earlier largest study from Japan (2), in only 1 out of 88 cases onset of the syndrome was associated with a hypoglycemic episode. Major triggering factors for the syndrome are psychological stress, such as death of a family member or relative, unusual exercise, worsening of underlying disease and operation, in which conditions sympathetic nerve activity is activated. It is therefore possible that hypoglycemic attack triggers the syndrome. Considering that this syndrome usually occurs in elder women, the relatively typical case described by Ohwada et al, a 17-year-old female with anorexia nervosa, is also a rare case from the point of onset age of the syndrome. Previous reports showed only 1 young case 10 years old who suffered from takotsubo cardiomyopathy (2). Common characteristic of both takotsubo cardiomyopathy and anorexia nervosa is female gender predominance. In contrast, takotsubo cardiomyopathy is common in older women and anorexia nervosa is in younger women. Basal- and exercise-induced sympathetic nerve activity is reported to be lower in patients with anorexia nervosa than in healthy women (8, 9). Thus, anorexia nervosa does not appear to be susceptible for takotsubo cardiomyopathy. In fact, although anorexia nervosa has been associated with mitral valve prolapse, possible QT interval prolongation, and heart failure, the association of these two syndromes has not been reported yet. However, this case report provides important information that hypoglycemic attack is one of triggering factors for takotsubo cardiomyopathy.

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References
2) Tsuchihashi K, Ueshima K, Uchida T, et al. Transient left ventricular