Successful transplantation of heart from a donor with Takotsubo syndrome

Authors:
E Omerovic1, J Oras1, B Redfors1, C Pirazzi1, R Doueh1, G Dellgren1, 1Sahlgrenska University Hospital - Gothenburg - Sweden,

Citation:
One reason for the shortage of donor hearts is the fact that current guidelines recommend against the use of donor hearts with regional wall motion abnormalities or left ventricular ejection fraction <40%. Fully reversible acute stress-induced cardiac dysfunction (Takotsubo syndrome) can occur in the setting of severe somatic stress and catecholamine excess. Here we present a donor heart with left ventricular dysfunction due to Takotsubo syndrome that was successfully transplanted.

The donor was a previously healthy, 59-years old female, with rapid onset of headache and neurological deterioration. In the ambulance, she became suddenly unconscious with seizures, respiratory arrest and hypoxia. She was successfully resuscitated after a brief period of CPR. Upon arrival to the hospital, her Glasgow Coma Scale was 3 and CT-scan showed a massive subarachnoid hemorrhage originating from a basilar aneurysm. The neurosurgeon was consulted but further measures were considered futile. She was transferred to the ICU where brain dead was diagnosed a couple of hours later. Echocardiography twelve hours after onset of symptoms revealed a left ventricle with apical akinesia in the apical and EF 35%. Troponin levels were modestly increased at 888 ng/l. Coronary angiography was performed 24 hours after onset of symptoms and showed normal coronary arteries. Ventriculography confirmed apical akinesia and basal hypercontractility typical for Takotsubo syndrome. End-diastolic pressure was 10 mmHg.

The recipient was a 57-year-old man on waiting list for heart transplantation for three months due to dilated cardiomyopathy diagnosed 12 years earlier. He was on guideline-recommended therapy, including synchronized biventricular pacing. Despite optimal therapy, cardiac function had deteriorated substantially during the last months. At the time he was accepted for heart transplantation he had biventricular heart failure with a dilated left ventricle and EF <20%, a moderate mitral insufficiency and a right ventricular systolic pressure of 70 mmHg. The peri-operative period was uneventful and the heart was successfully transplanted. Peri-operative transesophageal echocardiography showed good bi-ventricular function after ECC. Post-operatively, he had severe vasoplegia and required vasopressor support the first postoperative days. He had pulmonary hypertension that was treated with inhaled vasoprost and later per-oral sildenafil. He also developed acute renal failure with need of renal replacement therapy. However, left ventricular function was good with a hyperdynamic left ventricle and an ejection fraction >65% two days postoperatively (Video 3). Right ventricular function was initially compromised but was normalized within two weeks. He was discharged from the ICU after 14 days.