

Alcohol withdrawal-induced Takotsubo

Hesham Rashad Omar · Hany Demo Abdelmalak ·
Irina Komorova · Engy Helal · Enrico Mario Camporesi

Received: 10 October 2011 / Accepted: 1 March 2012 / Published online: 23 March 2012
© SIMI 2012

A 57-year-old lady presented to the hospital for an elective right thoracotomy and upper lobectomy after accidental discovery of a right lung spiculated nodule suggestive of malignancy. The patient had a past medical history of hypertension, dyslipidemia, carotid artery stenosis and peripheral arterial occlusive disease. She was a lifelong smoker who quit smoking 6 months earlier. She reported drinking several alcoholic beverages weekly. Preoperative exercise thallium test ruled out reversible ischemia, and echocardiogram revealed normal left ventricular function and valvular apparatus. Shortly after the extubation, the patient developed bradypnea and hypoxia which required re-intubation and transfer to the ICU. In the ICU, the patient was continuously restless necessitating dose escalation of sedating agents. Multiple attempts of weaning the patient off sedation resulted in intense agitation, tachypnea and tachycardia. On further questioning, the husband confirmed that his wife consumed at least two glasses of vodka daily; therefore, the cause of her agitation was suggested to be due to alcohol withdrawal. The patient was maintained on high-dose sedation with midazolam, and fentanyl in addition to dexmedetomidate and continued on ventilation support with failed extubation attempts.

On post-operative day 10, after attempting sedation reduction for a trial of weaning, her clinical status worsened. She became severely agitated, tachypnic at 50 breaths/min, tachycardic with a heart rate of 150 beats/min and clinical examination revealed evidence of acute pulmonary edema. Arterial blood gases revealed hypoxia and hypocapnea, BNP was 816 ng/L (N 0–100), and cardiac enzymes were as follow: CK 3,197 U/L (N 33–211); CKmB 11.3 ng/mL (N 0–5) and troponin 10 ng/mL N (0–0.08). The initial electrocardiogram revealed Q waves and ST segment elevation in V1 and V2 and T wave inversion in the precordial leads from V2 to V6 (Fig. 1a), and the follow up EKG revealed widespread deep T wave inversions and QT prolongation suggestive of Takotsubo Cardiomyopathy (TC) (Fig. 1b). The echocardiogram revealed severe global hypokinesia with an ejection fraction of 25 %. Our main concern was to rule out occlusive coronary artery disease (CAD), so, the patient was sent for emergent coronary angiography. Coronary angiography revealed non-occlusive CAD; however, left ventriculography revealed severe apical hypokinesia with the characteristic ballooning, which is a marker of TC (Fig. 1c–e). The case was complicated by cardiogenic shock requiring nor-epinephrine, dopamine and an intra-aortic balloon pump until hemodynamic stability was achieved. The patient was discharged from the hospital 3 weeks after surgery.

TC is becoming an increasingly recognized clinical disorder first reported in 1990 in the Japanese population by Sato et al. [1]. It accounts for 1–2 % of suspected acute myocardial infarction cases [2] with a specific predilection for postmenopausal females who make up over 90 % of the patients in most series. Several theories have been proposed to explain the transient cardiac dysfunction in TC, of which the most accepted is a catecholamine surge triggered by various emotional or physical stressors. Clinical

H. R. Omar (✉) · H. D. Abdelmalak · I. Komorova
Internal Medicine Department, Mercy Hospital and Medical
Center, 2525 South Michigan Avenue, Chicago, IL 60616, USA
e-mail: Hesham_omar2003@yahoo.com

E. Helal
Emergency Department, Elagouza Hospital, Cairo, Egypt

E. M. Camporesi
Professor Emeritus of Anesthesiology, University of South
Florida and FGTBA, Tampa, FL, USA

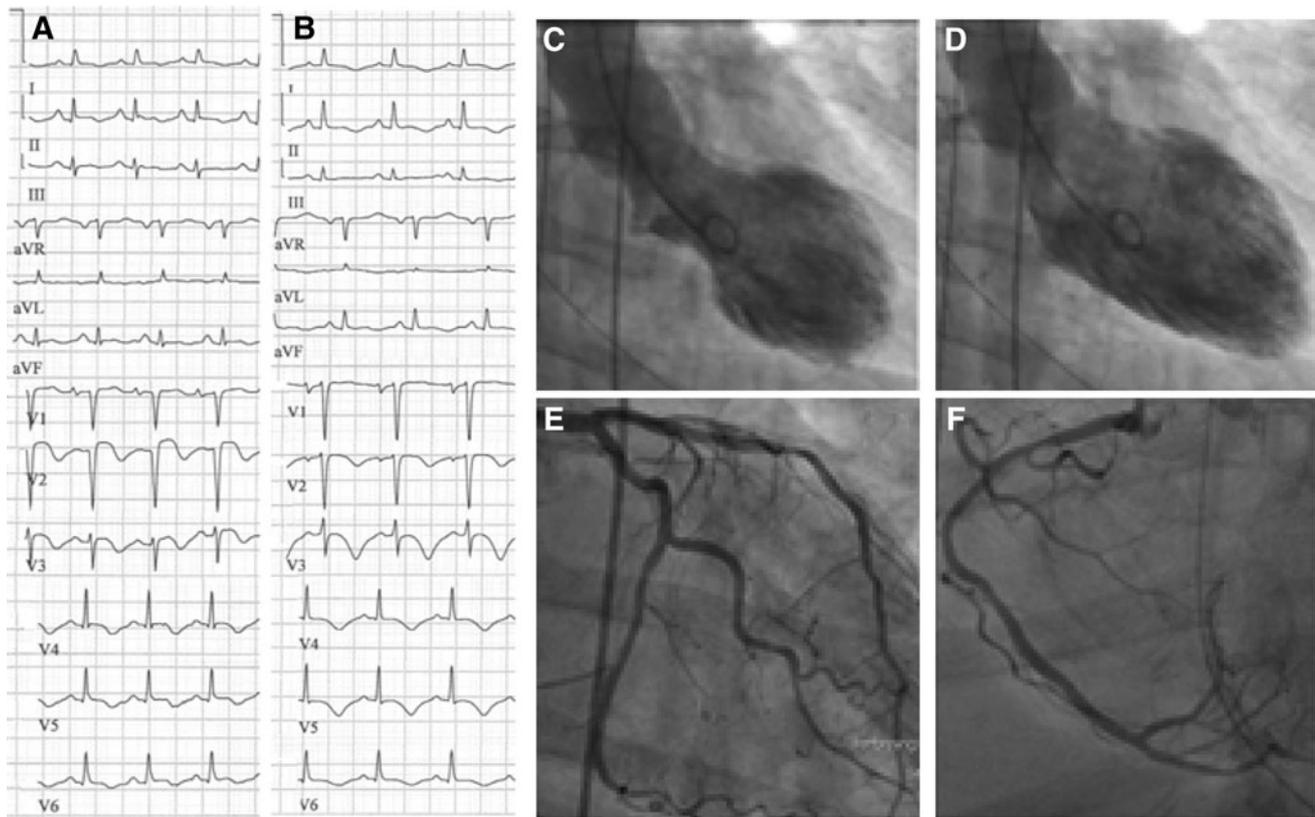


Fig. 1 **a** Electrocardiogram demonstrating Q waves and ST segment elevation in V1 and V2 and T wave inversion in V2–V6. **b** A follow up electrocardiogram demonstrating the characteristic deep T wave inversion and prolonged QT interval suggestive of TC. **c** Left

ventriculogram during systole revealing the characteristic apical ballooning suggestive of TC. **d** Left ventriculogram during diastole. **e**, **f** Left and right coronary angiography revealing non-occlusive coronary artery disease; 75 % proximal RCA and 60 % mid LAD

presentation usually mimics acute coronary syndrome, and patients are usually referred for urgent cardiac catheterization to rule out CAD. The presented case fulfilled all four Mayo clinic criteria adapted for the diagnosis of TC. Alcohol withdrawal is a hyper-adrenergic state characterized by high levels of plasma catecholamines and increased beta-adrenergic receptor sensitivity. There are a few reports in the literature demonstrating the development of TC as a complication of alcohol withdrawal [3–5]. Our case was a good substrate for stress-induced cardiomyopathy due to the continued agitation, tachycardia and tachypnea that occurred during periods of under-sedation in attempts to wean from mechanical ventilation. The clinical scenario, echocardiographic signs of left-ventricular dysfunction, the characteristic EKG changes in the absence of occlusive coronary artery disease and the classic apical ballooning on left ventriculography confirmed the diagnosis of TC. Although alcohol-withdrawal symptoms usually persist for up to 7 days, the course was more prolonged and severe in this case. We aim to emphasize that severe alcohol withdrawal can be a precursor for TC and therefore the

importance of providing adequate sedation to these patients sufficient to abate this intense adrenergic surge.

Conflict of interest None.

References

1. Sato H, Tateishi H, Uchida T et al (1990) Takotsubo type cardiomyopathy due to multivessel spasm. In: Kodama K, Haze K, Hon M (eds) Clinical aspect of myocardial injury: from ischaemia to heart failure. Kagakuhyouronsya, Tokyo, pp 56–64 Japanese
2. Kurowski V, Kaiser A, von Hof K et al (2007) Apical and midventricular transient left ventricular dysfunction syndrome (tako-tsubo cardiomyopathy): frequency, mechanisms, and prognosis. *Chest* 132:809–816
3. Thompson AG, Hung J (2011) Takotsubo cardiomyopathy associated with alcohol withdrawal. *Med J Aust* 194(7):373
4. Alexandre J, Benouda L, Champ-Rigot L, Labombarda F (2011) Takotsubo cardiomyopathy triggered by alcohol withdrawal. *Drug Alcohol Rev* 30(4):434–437
5. Kalra N, Khetpal P, Sorrell VL (2009) Seriously stressed. *Am J Med* 122(8):735–737