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IMAGE FOCUS

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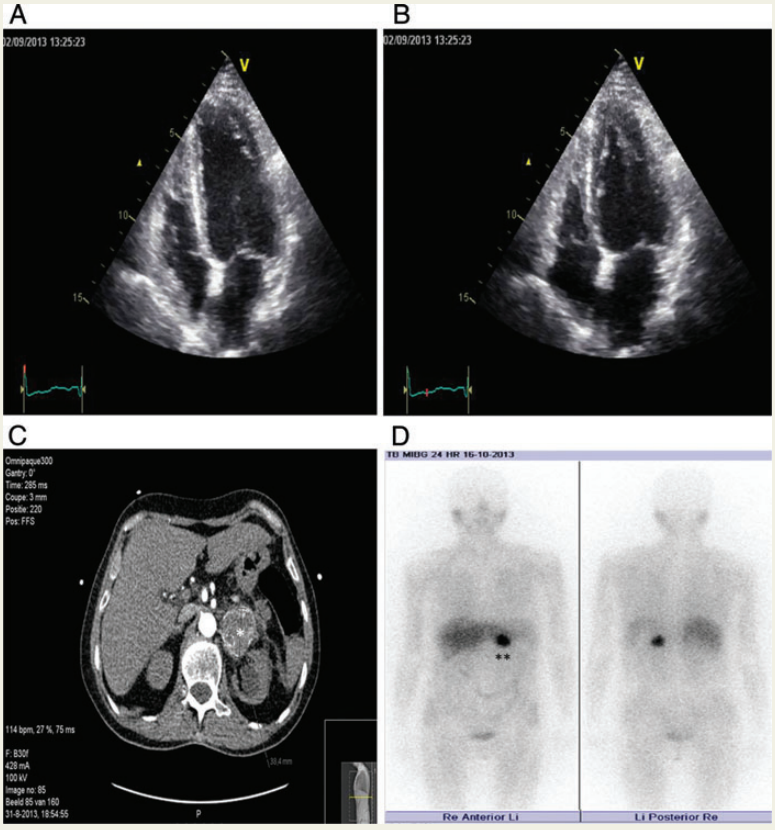
Repetitive stress-induced cardiomyopathy due to inverted Takotsubo in exaggerated sympathetic stimulation by pheochromocytoma

Jasper Jan Brugts[1]*, Marco van Gent[2], Kadir Caliskan[1], and Marcel J.M. Kofflard[2]

[1]Department of Cardiology, Erasmus MC Thoraxcenter, 's Gravenwijkwal 230, 3015 CE Rotterdam, The Netherlands and [2]Department of Cardiology, Albert Schweitzer Ziekenhuis, Dordrecht, The Netherlands

* Corresponding author. Tel: +31 108003938, Email: j.brugts@erasmusmc.nl



A 75-year-old woman without relevant medical history or cardiac risk factors presented at the emergency ward with atypical chest pain, sweating, and gastric complaints of nausea and vomiting. Blood pressure 150/80 mmHg and no signs of congestion. The electrocardiogram showed a sinus rhythm with a 2 mm ST-segment depression in precordial leads. Blood results revealed positive troponins, normal renal function, and elevated lactate levels. A transthoracic echocardiogram (TTE) showed moderately impaired left ventricular (LV) function with akinesis of basal segments and hyperkinesis of apical segments (*Panels A* and *B*). Cardiac catheterization revealed no significant coronary stenosis (see Supplementary data online, *Web Appendix*). Several weeks later, a TTE showed normal LV function with restoration of kinesis of basal segments. The patient was diagnosed stress-induced cardiomyopathy with basal ballooning. Most interestingly, 2 years later, the same episode occurred again. Due to the presentation, a computed tomography (CT) aorta was made to rule out aortic dissection, which accidentally revealed an adrenal tumour, which was confirmed to be a pheochromocytoma on iodine-131-meta-iodobenzylguanidine (MIBG) scan including elevated metanephrines in 24 h urine samples (*Panels C* and *D*). The pheochromocytoma was most likely also involved in the first episode due to exaggerated sympathetic stimulation resulting in myocardial stunning. In addition, LV function restored completely and the patient is doing well after resection for pheochromocytoma. Stress-induced cardiomyopathy is characterized by transient akinesis of wall segments, typically precipitated by acute stress or sympathetic stimulation in the absence of obstructive coronary disease. The pheochromocytoma is an important differential diagnosis. Owing to the characteristic shape, the disease is frequently named Takotsubo cardiomyopathy (apical ballooning) or the much rarer variant 'inverted Takotsubo' (basal ballooning).

Conflict of interest: none declared.

Repetitive stress-induced cardiomyopathy due to inverted Takotsubo in exaggerated sympathetic stimulation by pheochromocytoma. (*Panel A*) Echocardiography: end-diastolic still frame apical four-chamber view showing hyperkinesis of apical and mid-wall segments and akinesis of basal wall segments. (*Panel B*) Echocardiography: end-systolic still frame apical four-chamber view showing hyperkinesis of apical and mid-wall segments and akinesis of basal wall segments. (*Panel C*) CT abdomen revealing tumour mass in the adrenal gland suspected of pheochromocytoma measuring 38.4 mm as marked by white asterisk. (*Panel D*) MIBG-scintigraphy using I-123 localized the pheochromocytoma (dark circular shadow near body centre, marked by double asterisks), also showing physiological radioiodine collection in thyroid and pelvis (bladder).

Supplementary data are available at *European Heart Journal – Cardiovascular Imaging* online.

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