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Inverted Takotsubo: A Case Report with Literature Review

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Abstract **Case Report**

Introduction: Takotsubo cardiomyopathy is characterized by transient systolic dysfunction of LV apical segments mimicking myocardial infarction in the absence of obstructive coronary involvement. It represents about 1.2% of all acute coronary events. Inverted Takotsubo is a very rare variant in which kinetic disorders interest the base and middle segments of the LV. We present the case of a patient with an inverted takotsubo with literature review. ***Case Report:*** Patient of 63 years, Frcvx: Dyslipidemia and DT2 under treatment, who consults at J2 with a retroternal acute chest pain without irradiation, prolonged >45 min following an emotional shock (death in the family). At admission, the patient is conscious, no longer suffering, TA=150/60, FC=90, FR=15, SPO2:98%, cardiovascular and pleuropulmonar examination were without abnormalities. The rest of the exam was clean. The patient benefited from an initial ECG that showed T(-) waves in Anteroseptoapical and lateral low with a steep ST segment below, the diagnosis of an NSTEMI is taken then put on the dose of Clopidogrel and aspirin then send to the hospital, upon its arrival the patient has benefited from an ECG that shows the same aspect in ASA, but T(+) waves in the lower lateral and lower, subcutaneous initiation of anticoagulation. The next day the ECG showed positive ASA waves T. The initial troponin was 600xN, then 60xN, then 50xN. Echocardiography shows kinetic disorders of the basal and middle segments, a 48% impaired LVEF, and a 10% SLG, the patient received a coronary artery that returned normal, Control echocardiography after a week showed improvement in contractility, LV function and strain, MRI returned normal. ***Conclusion:*** Inverted takotsubo is a very rare variant of classical takotsubo with similar physiopathological symptoms and mechanisms, important to identify as it tends not to be recognized as easily as traditional presentation. Its recognition helps improve prognosis.

Keywords: Takotsubo cardiomyopathy; reversed takotsubo; transient systolic dysfunction.

INTRODUCTION

Takotsubo cardiomyopathy is characterized by transient systolic dysfunction of the apical segments of the left ventricle mimicking myocardial infarction in the absence of obstructive coronary involvement. It represents about 1.2% of all acute coronary events [1]. Inverted Takotsubo, a very rare variant in which kinetic disorders interest the base and middle segments of the left ventricle [1]. The majority of patients with takotsubo cardiomyopathy return to good systolic function within three to six months. We present the case of a patient with reverse takotsubo cardiomyopathy with a literature review.

CASE REPORT

This is a 63-year-old patient with cardiovascular risk factor Dyslipidemia on treatment and Type 2 diabetes on oral antidiabetics, with no other Special History, who consults on the second day of acute constrictive retroternal chest pain without prolonged irradiation more than 45 minutes after an emotional shock (death of a family member). In front of this clinical chart the patient went to a cardiology practice in private and then transferred to the cardiology department B for further care. The clinical examination at admission finds a conscious patient, supports the Decubitus Dorsal, no longer suffering, Arterial Tension = 150/60, Heart Frequency = 90 Respiratory Frequency = 15 SPO2: 98%, cardiovascular and pleuropulmonary examination were free of abnormalities. The rest of the examination was also without particularity. The patient received an initial ECG in the private cardiologist who showed negative T-waves in the anteroseptoapical and lower lateral with a steep ST segment below (Fig-1). Putting on Dose of charge of Clopidogrel and Aspirin and then send to the hospital, upon arrival the patient has benefited from an ECG also that shows the same aspect in ASA, but T-waves become positive in the lower and lower lateral (Fig-2), subcutaneous Anti

Coagulation during the guard period. The next day the patient received an ECG that showed positive T-waves in ASA (Fig-3). The biological balance sheets showed an initial troponin at 600 x the normal, then at 60 x the normal and then at 50 x the normal the rest of the balance shows an imbalance in its glycemia,At Echocardiography the patient showed hypokinesia mainly of the basal segments with good apical contractility and LVEF at 48%, With overall longitudinal strain at -10%, The patient received a coronary angiogram which returned normal (Fig 4 to 7). The Control Echocardiography after a week showed an improvement in contractility, LV function and strain MRI returned normal.

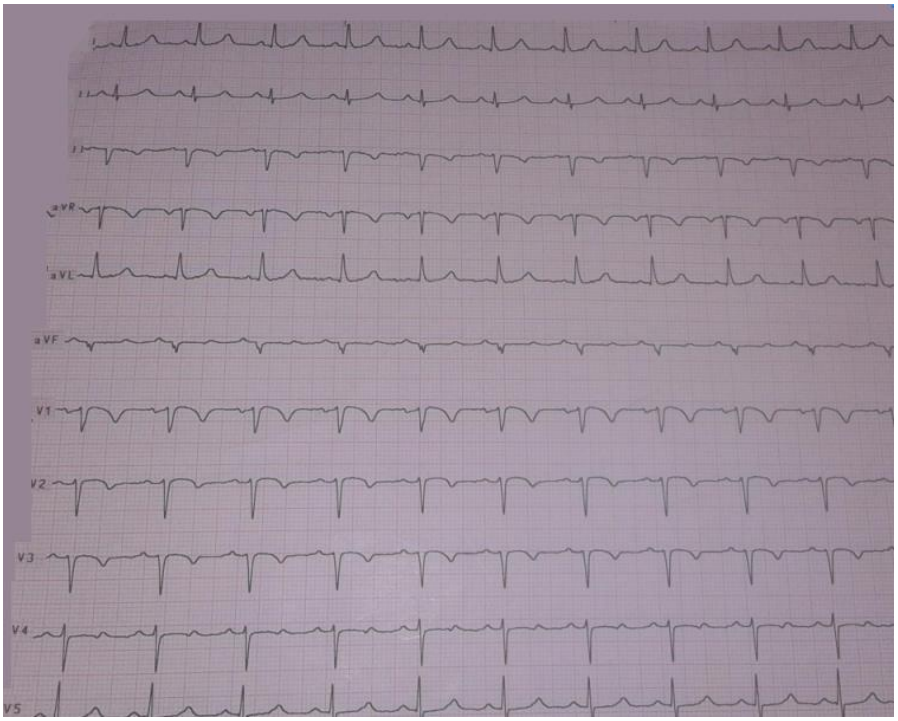

Fig-1: ECG showing T-waves – in ASA and low lateral

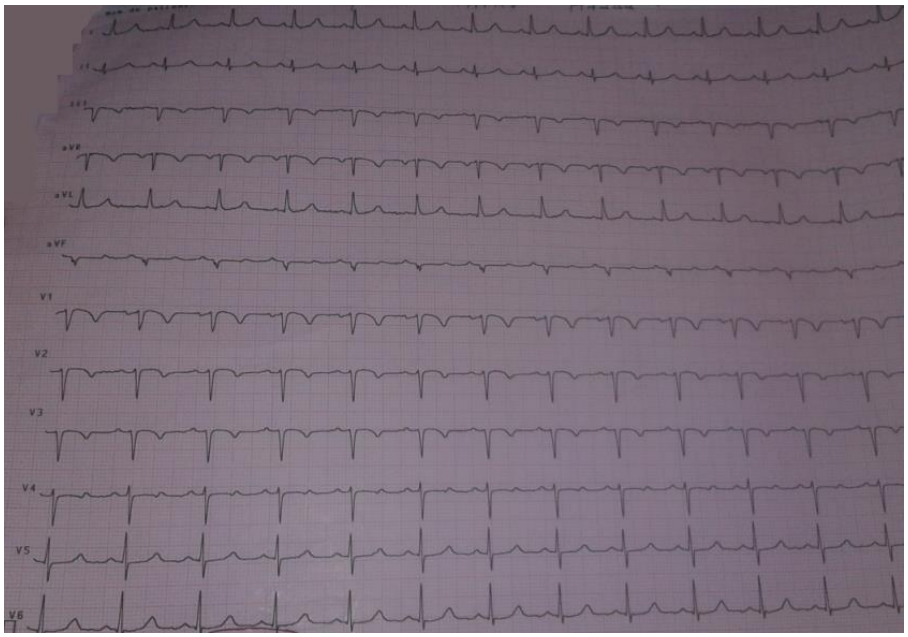

Fig-2: ECG showing negative ASA T-waves

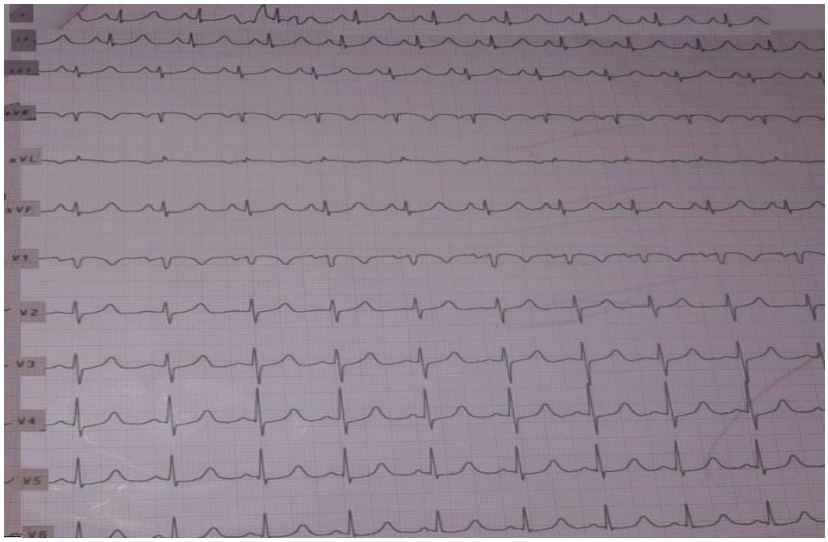

Fig-3: ECG normal

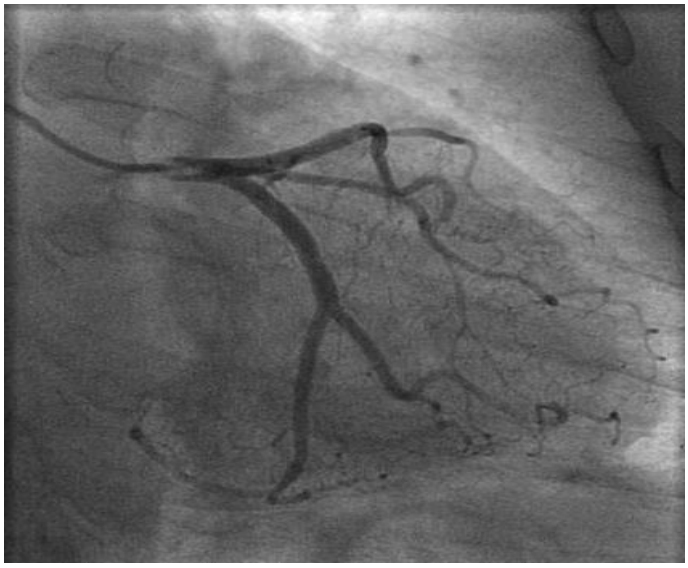

Fig-4: Coronary artery anterior ventricular

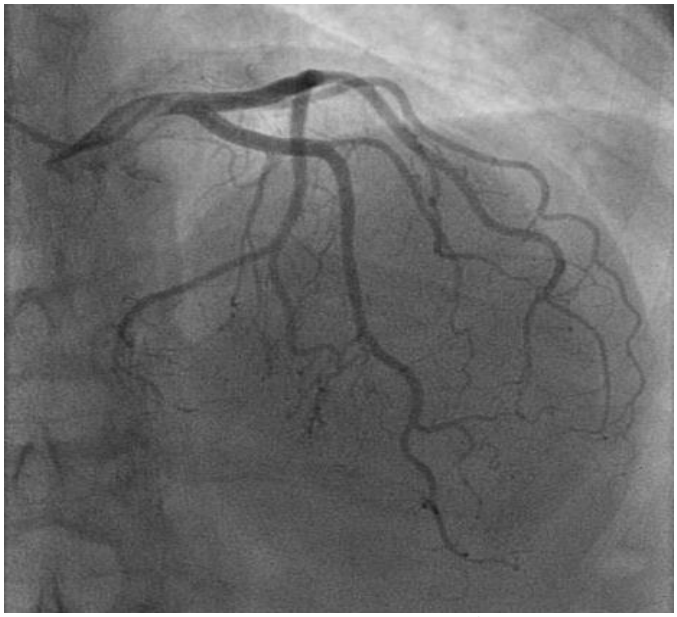

Fig-5: Coronary artery anterior ventricular and circumflex without abnormalities

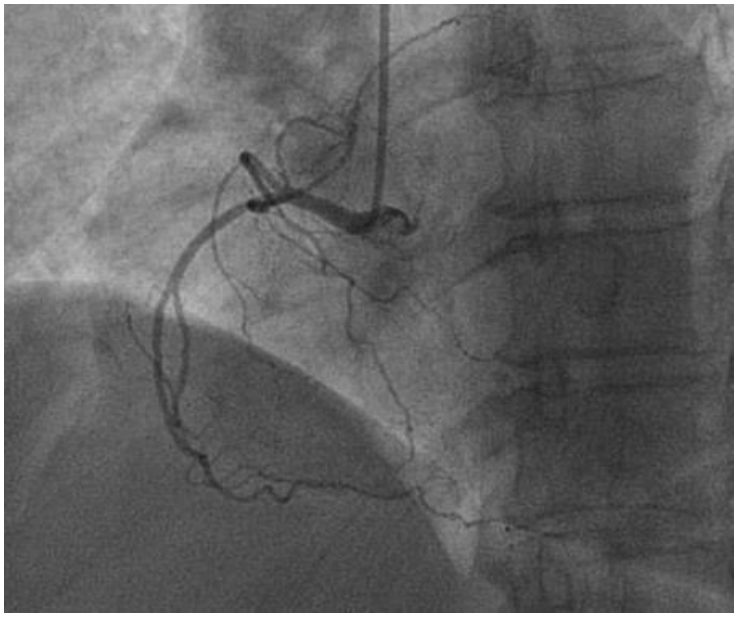

Fig-6: Coronary artery coronary without abnormalities

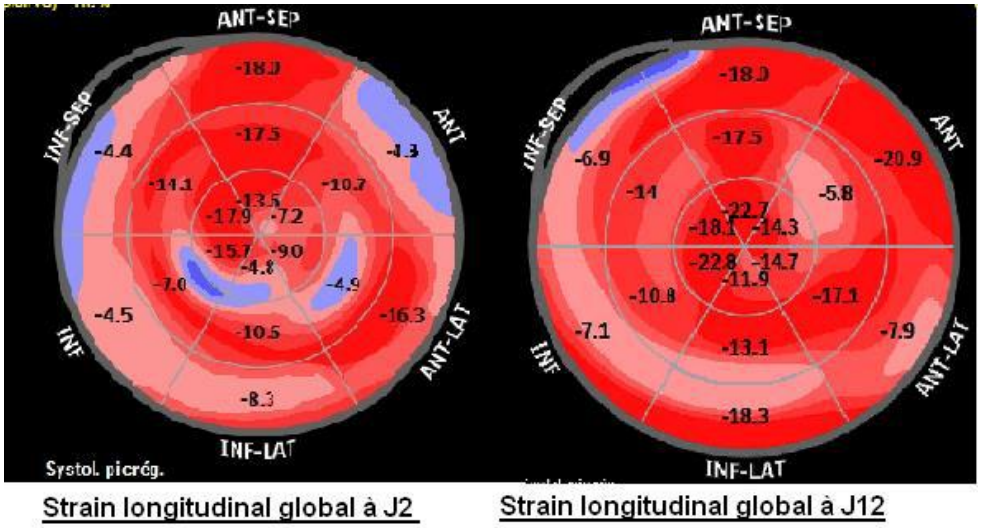

Fig-7: LV strain showing improvement in contractility at 10-day intervals

DISCUSSION

Takotsubo, also known as Broken Heart Syndrome, is a cardiomyopathy commonly seen in a context of acute emotional or physical stress, the role of which a catecholaminic agent is strongly suspected [2]. The pathological role of catecholamines can be indirect, as there have been cases in endogenous adrenergic stimulation (for example, iatrogenic or via a pheochromocytoma) and which has led to the manifestation of this entity [3]. The exact mechanism of damage caused by catecholamines remains incomprehensible. There are two main theories - vascular dysfunction and catecholamine-induced toxicity. Vasospasm is strongly associated with takotsubo cardiomyopathy. Patients with multifocal coronary vasospasm undergoing ventriculography demonstrated a form of apical balloon [4].

Thrombolysed patients in myocardial infarction who have benefited from coronary angiography that shows no obstructive coronary involvement, suggests alteration of epicardial coronary circulation due to spasm of microcirculation [5]. Endomyocardial biopsy data in patients with takotsubo shows that myocyte lesions occur following excessive presence of catecholamines [6]. Histological results of patients with takotsubo cardiomyopathy show myofibrillar degeneration, necrosis bands and infiltration of mononucleated leukocytes, which are forms of myocyte injury observed in catecholaminergic toxicity [7]. Molecular studies have shown that high doses of epinephrine are directly toxic to cells, resulting in an increase in adenosine levels 3': 5'-cyclic monophosphate and calcium which then trigger the formation of free oxygen radicals, initiation of expression of stress response genes, and induction of apoptosis [8]. Compared to patients with apical

bloating, patients with reverse takotsubo cardiomyopathy and very common in the youngest, with an average age of 36 years, and often as a result of a factor trigger emotional or physical stress [9, 10]. The belief is that catecholamines act on adrenergic receptors which have their highest density in the apex of the heart in menopausal women, which explains the occurrence of the apical variant in elderly women [8]. The presentation of reversed takotsubo cardiomyopathy may be due to the abundance of adrenergic receptors at the base of the heart, compared to apex in conventional takotsubo. Patients with takotsubo reverse cardiomyopathy may have less pulmonary edema, dyspnea and cardiogenic shock than patients with takotsubo classic cardiomyopathy [9] his finding suggests that differences in clinical characteristics are concomitant with possible hemodynamic changes caused by the difference in the location of kinetic disorders.

In classic takotsubo cardiomyopathy, obstruction of the left ventricular flushing chamber and hyperkinesia can contribute to severe mitral shock or regurgitation [11]. Patients with reverse takotsubo cardiomyopathy have significantly higher rates of cardiac biological markers, such as creatine kinase M (muscle type) or B (brain type) and troponin-I, as patients with cardiomyopathy takotsubo apical or mid-ventricular [10]. This could be explained by the extent of the myocardium involved in each form, with more myocardial tissue being assigned to reverse takotsubo cardiomyopathy rather than the classic.

CONCLUSION

Inverted takotsubo is a very rare variant of classical takotsubo with similar physiopathological symptoms and mechanisms, important to identify as it tends not to be recognized as easily as traditional presentation. Its recognition helps improve the prognosis.

REFERENCE

1. Département de médecine interne Suite H-102, Suzanne Watts - Programme Coordinateur, Centre médical de l'Université Baylor, 3500 Gaston Avenue, Dallas, TX 75246, USA. Centre médical de l'Université Baylor, 621 Hall Street # 400, Dallas, TX 75226, USA.
2. Baylor University Medical Center, Suite 621 North Hall Street 500, Dallas, Texas 75226, États-Unis. Centre des sciences de la santé 4Texas A & M, College of Médecine, Dallas, Texas, États-Unis. Reçues le 24 juin 2012 Acceptées le 16 janvier 2013 Publié: 19 mars 2013.
3. Kurowski V, Kaiser A, von Hof K, DP Killermann, Mayer B, Hartmann F, Schunkert H, Radke PW. Apicale et transitoire ventriculaire gauche syndrome de dysfonctionnement ventriculaire (cardiomyopathie tako-tsubo): fréquence, mécanismes et pronostic. Chest, 2007, 132: 809–816.
4. Tsuchihashi K, Ueshima K, Uchida T, Oh-mura N, Kimura K, Owa M, Yoshiyama M, Miyazaki S, Haze K, Ogawa H, Honda T, Hase M, Kai R, Morii I. Enquêtes sur l'angine de poitrine et l'infarctus du myocarde au Japon: gauche transitoire Ballonnement apical ventriculaire sans sténose de l'artère coronaire: un roman syndrome cardiaque imitant l'infarctus aigu du myocarde. Angine de poitrine- Enquêtes sur l'infarctus du myocarde au Japon. Journal Am Coll Cardiol, 2001, 38: 11-18.
5. Takizawa M, Kobayakawa N, Uozumi H, Yonemura S, Kodama T, Fukusima K, Takeuchi H, Kaneko Y, Kaneko T, Fujita K, Honma Y, Aoyagi T. Un cas de ballonnement ventriculaire gauche transitoire avec phéochromocytome, soutenir le rôle pathogénique des catécholamines dans le stress cardiomyopathie ou cardiomyopathie takotsubo. Int Journal Cardiol, 2007,114: e15-e17.
6. Nojima Y, Kotani J: takotsubo provoqué par un spasme de l'artère coronaire globale cardiomyopathie. Journal Am Coll Cardiol, 2010, 55: e17.
7. Bybee KA, Prasad A, Barsness GW, Lerman A, Jaffe AS, Murphy JG, Wright RS, Rihal CS. Caractéristiques cliniques et thrombolyse dans l'infarctus du myocarde cadre compte chez les femmes atteintes de gonflement transitoire du ballon apical ventriculaire gauche syndrome. Am Journal Cardiol, 2004, 94:343-346.
8. Ako J, Sudhir K, Farouque HM, Honda Y, Fitzgerald PJ. Transitoire à gauche dysfonctionnement ventriculaire en situation de stress intense: relation cerveau-cœur revisité. Am Journal Med, 2006, 119:10-17.
9. Nfor T, Kostopoulos L, Hashim H, Jan MF, Gupta A, Bajwa T, Allaqaband S. Identifier l'infarctus du myocarde avec élévation du faux-positif faussement positif chez patients du service des urgences. Journal Emerg Med, 2012, 43: 561–567.
10. Lyon AR, Rees PS, Prasad S, Poole-Wilson PA, Harding SE. Stress (Takotsubo) cardiomyopathie - une nouvelle hypothèse physiopathologique pour expliquer étourdissement aigu du myocarde provoqué par la catécholamine. Nat Clin Pract Cardiovasc Med, 2008, 5: 22-29.