

## Reverse Takotsubo cardiomyopathy following intra-abdominal surgery

### Karın içi cerrahi sonrası meydana gelen Ters Takotsubo kardiyomiyopatisi

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**Summary**– Reverse Takotsubo cardiomyopathy (RTC) is a rare condition characterized by systolic dysfunction of the basal segments of the left ventricle in the absence of obstructive coronary artery disease. The case of a 50-year-old woman with RTC following intra-abdominal surgery is described in the present report.

**B**roken heart syndrome, or Takotsubo cardiomyopathy (TCM), is characterized by acute, reversible cardiac dysfunction without significant coronary arterial stenosis. Primary triggering factors are emotional or physical stressors.<sup>[1]</sup> Inverted, or reverse, Takotsubo cardiomyopathy (RTC) is stress-induced and diagnosed by regional wall-motion abnormalities localized at the basal segments of the myocardium, with hyperkinetic apical segments on echocardiography.<sup>[2]</sup>

In the present report, a patient with RTC following intra-abdominal surgery is described.

#### CASE REPORT

A 51-year-old woman presented to the cardiology department with chest pain and dyspnea after having undergone laparoscopic cholecystectomy a day earlier. Her medical history was unremarkable, with no cardiac disease. The patient had blood pressure of 110/70 mm Hg, respiratory rate of 22 breaths per minute, and oxygen saturation of 93%. Cardiac examination revealed no heart murmur. Mild cardiomegaly and increased pulmonary congestion were seen on chest x-ray. Electrocardiography revealed inverted T waves

**Özet**– Ters Takotsubo kardiyomiyopatisi (KMP) kalbin daha çok bazal segmentlerini etkileyen ve anlamlı koroner darlığın olmadığı nadir bir kalp yetersizliği sebebidir. Bu yazıda, 50 yaşında kadın hastada karın içi cerrahi sonrası gelişen ters Takotsubo kardiyomiyopatisi sunuldu.

and ST-segment depression in V4–V6 leads (Figure 1a, b).

Laboratory examination showed elevated troponin levels.

Coronary angiography showed normal coronary arteries with no coronary stenosis. Echocardiographic examination revealed hypokinetic basal segment of the myocardium and hyperkinetic apical segments (Video 1\*) with left ventricular ejection of 42%, determined by modified Simpson's method. Therapy of beta-blocker and angiotensin-converting-enzyme inhibitor (ACE-inhibitor) was initiated. The patient was discharged without complication, and 61 days later, echocardiographic examination revealed normokinetic basal and apical segments of the myocardium (Video 2\*).

#### Abbreviations:

ACE	Angiotensin converting enzyme
RTC	Reverse takotsubo cardiomyopathy
TCM	Takotsubo cardiomyopathy

#### DISCUSSION

TCM is a well-recognized clinical syndrome of reversible left ventricular dysfunction that typically involves the apical segments and appears with normal coronary arteries.<sup>[1]</sup> In contrast to classic TCM, RTC is stress-induced and involves the basal and midven-

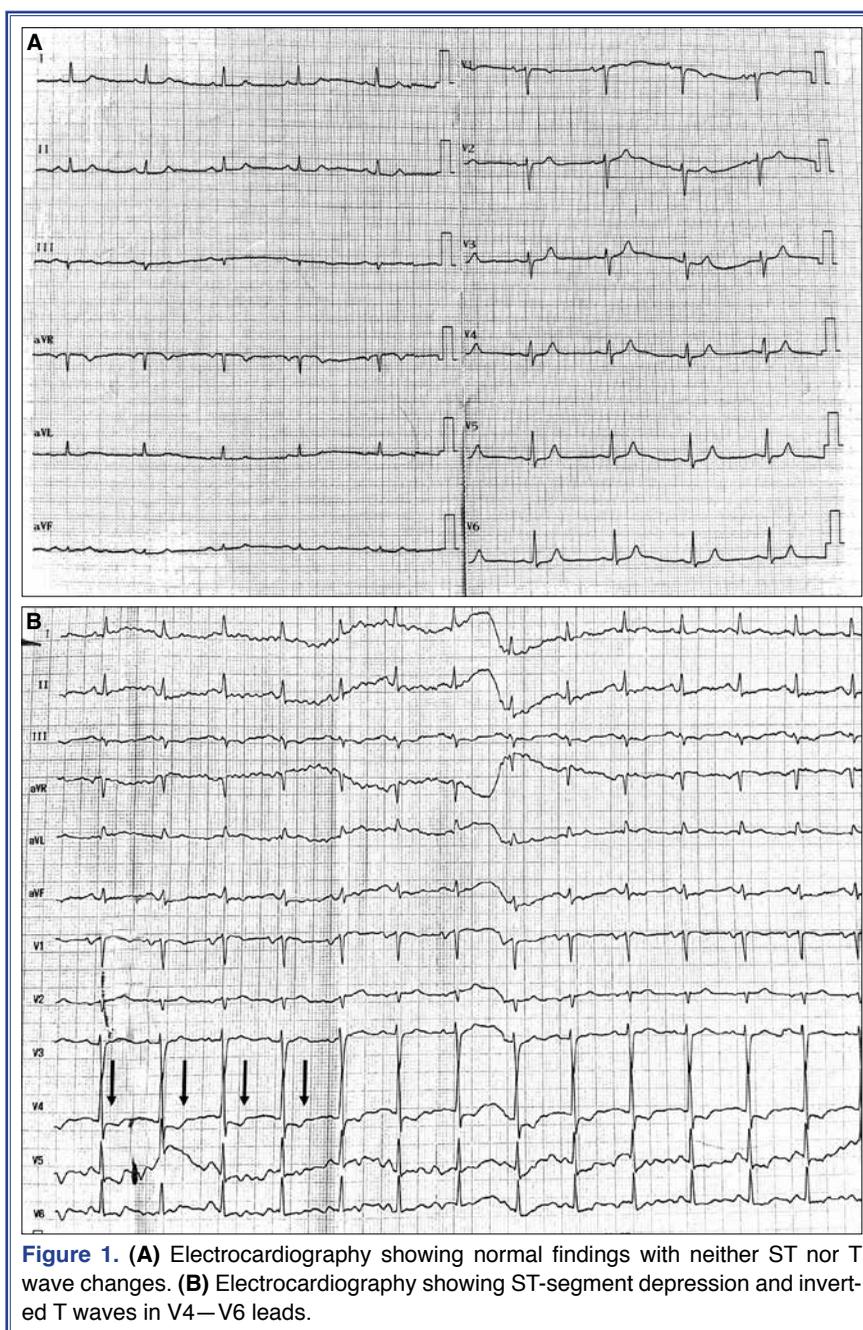
Received: October 08, 2015 Accepted: January 15, 2016

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tricular segments, while the contractility of the apical segments is preserved.<sup>[3]</sup> Wall-motion abnormalities and left ventricular dysfunction are completely reversible in the majority of cases.<sup>[4]</sup>

Clinical presentation of RTC mimics acute coronary syndrome and may include symptoms of chest pain, shortness of breath, elevated cardiac enzymes, and ischemia or acute myocardial infarction detected on electrocardiogram.<sup>[4]</sup> In addition, patients may present with severe left ventricular dysfunction, acute

heart failure, and cardiogenic shock.<sup>[5]</sup>

While the mechanism of TCM is still uncertain, it appears often to be triggered by emotional or physical stress.<sup>[5]</sup> Pathophysiology relies on 2 primary theories: vascular dysfunction and induction by catecholamine.<sup>[6]</sup> It has been proposed that variations in the density of adrenoceptors on the myocardial segments cause change in the distribution of wall-motion abnormalities. In cases of RTC, a majority of adrenoceptors may be found in the basal segments of the myocardium.<sup>[7]</sup>

There are no guidelines for TCM treatment, and no randomized, double-blind studies have been conducted. Treatment is primarily empirical and must be individualized. It must follow current heart failure and coronary artery disease guidelines, and be managed according to guidelines for diagnosis and treatment of acute coronary syndromes. Diagnosis must involve detailed medical history, electrocardiography, echocardiography, coronary angiography, and troponin testing. Following diagnosis, supportive care usually leads to spontaneous recovery.<sup>[8]</sup> Supportive therapy should include beta-blockers as initial treatment,<sup>[9]</sup> in addition to ACE-inhibitors or angiotensin II blockers, as TCM is associated with transient left ventricular dysfunction.

The present patient was treated with beta-blocker and ACE-inhibitor. No other complications were present. Clinical and echocardiographic findings were normal on 61-day follow-up.

**Conflict-of-interest issues regarding the authorship or article: None declared.**

**\*Supplementary video file associated with this article can be found in the online version of the journal.**

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**Keywords:** Surgery; stress cardiomyopathy; Takotsubo cardiomyopathy.

**Anahtar sözcükler:** Cerrahi; stres kardiyomiyopati; Takotsubo kardiyomiyopatisi.