

# Takotsubo Cardiomyopathy Associated with Levothyroxine over-Replacement

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## Background

Takotsubo cardiomyopathy (TC) is characterized by acute, transient left ventricular apical ballooning precipitated by emotional or physiologically stressful stimuli and has been previously associated with Grave's disease based on few clinical reports.

Iatrogenic hyperthyroidism on patients under levothyroxine replacement therapy for hypothyroidism had never been reported as a cause of TC.



Fig 1 - Left ventriculogram in Takotsubo cardiomyopathy and a traditional Japanese octopus trap called "Takotsubo"  
Golabchi A, Sarrafzadegan N. Takotsubo cardiomyopathy or broken heart syndrome: A review article. J Res Med Sci. Mar 2011; 16(3): 340-345.

## Clinical cases

IDENTIFICATION	MMMF, female, caucasian, 74 years old	MMFSA, female, caucasian, 48 years old
<b>HISTORY OF PRESENT ILLNESS</b>	Sudden and severe pre-cordial pain, described as a sensation of tightness that began after mild effort and was accompanied by nausea. Refers unusual amount of stress in the past 2 weeks.	Pre-cordial pain that irradiated to the left arm, with palpitations and dyspnea. The pain started after emotional stress.
<b>PAST MEDICAL HISTORY</b>	<ul style="list-style-type: none"> <li>• Autoimmune thyroiditis with hypothyroidism</li> <li>• Osteoporosis</li> <li>• Mitral valve regurgitation</li> <li>• Reumathoid arthritis</li> </ul>	<ul style="list-style-type: none"> <li>• Autoimmune thyroiditis with hypothyroidism</li> <li>• Hypertension</li> <li>• Dyslipidemia</li> <li>• Laparoscopic apendicectomy in 2010,</li> <li>• Hyterectomy in 2012</li> </ul>
<b>MEDICATION</b>	<ul style="list-style-type: none"> <li>• Levothyroxine 1,25 mg id (2,27mcg/Kg)</li> <li>• Calcium carbonate and colecalciferol 1250mg + 400IU id</li> <li>• Sivastatin 20mg id</li> <li>• Escitalopram 10mg id</li> <li>• Macrogol 10000mg id</li> </ul>	<ul style="list-style-type: none"> <li>• Levothyroxine 1,5 mg id (1,85 mcg/Kg)</li> <li>• Acetylsalicylic acid 100mg id</li> <li>• Telmisartan/hydrochlorothiazide 40/12,5 mg id</li> <li>• Pitavastatin 2mg id</li> </ul>
<b>COMPLEMENTARY DIAGNOSIS EXAMS</b>	<p><b>ECG</b> - ST-segment elevation in the anterior precordial leads</p> <p><b>Echocardiogram</b> – antero-inferior apical hipokinesia. LVEF 43%</p> <p>Elevation of <b>chardiac markers</b></p> <p><b>Catheterisation</b> with no significant coronary lesions, ventriculogram with marked antero-inferior apical hipokinesia</p> <p><b>TSH</b> of 0,21 mIU/L</p>	<p><b>ECG</b> - sinus tachycardia (144bpm) with deep T-wave inversion and QT interval prolongation</p> <p><b>Echocardiogram</b> – apical hypokinesia</p> <p>Elevation of <b>chardiac markers</b></p> <p><b>Coronary catheterisation</b> with no significant lesions</p> <p><b>TSH</b> of 0,07 mIU/L</p>
<b>HOSPITAL COURSE</b>	Levothyroxine dose was reduced. After admition the patient remained asyptomatic, the control echocardiogram showed improvement of the apical hypokinesis , the analysis showed normalization of cardiac biomarker levels.	Levothyroxine dose was reduced. The patient denied further pain episodes. The discharge echocardiogram revealed an improvement on apical contractility.

## Conclusion

As they add up to the growing evidence of the association of TC and thyrotoxicosis, these cases emphasize the importance of correct dose adjustment on patients under levothyroxine replacement therapy and stress that TSH should be determined in all patients presenting with acute coronary syndrome and typical finding of TC.

