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Original article

Characterization of Tako-tsubo Cardiomyopathy in Spain: Results from the RETAKO National Registry

Iván J. Núñez Gil,[a,*] Mireia Andrés,[b] Manuel Almendro Delia,[c] Alessandro Sionis,[d] Ana Martín,[e] Teresa Bastante,[f] Juan Gabriel Córdoba Soriano,[g] José A. Linares Vicente,[h] Silvia González Sucarrats,[i] and Alejandro Sánchez-Grande Flecha[j] on behalf of the RETAKO investigators[◇]

[a] *Instituto Cardiovascular, Hospital Clínico San Carlos, Madrid, Spain*
[b] *Servicio de Cardiología, Hospital Vall d'Hebron, Barcelona, Spain*
[c] *Servicio de Cardiología, Hospital Virgen Macarena, Seville, Spain*
[d] *Unidad de Cuidados Intensivos Cardiológicos, Servicio de Cardiología, Hospital de Sant Pau, Instituto de Investigación Biomédica Sant Pau (IIB Sant Pau), Barcelona, Spain*
[e] *Servicio de Cardiología, Hospital Universitario de Salamanca, Salamanca, Spain*
[f] *Servicio de Cardiología, Hospital Universitario de la Princesa, Madrid, Spain*
[g] *Servicio de Cardiología, Complejo Hospitalario Universitario de Albacete, Albacete, Spain*
[h] *Servicio de Cardiología, Hospital Clínico Lozano Blesa, Zaragoza, Spain*
[i] *Servicio de Cardiología, Hospital Universitario Arnau de Vilanova, Lerida, Spain*
[j] *Servicio de Cardiología, Hospital Universitario de Canarias, Santa Cruz de Tenerife, Spain*

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ABSTRACT

Introduction and aims: The etiology and epidemiology of tako-tsubo cardiomyopathy remain uncertain. The symptoms of this condition are often similar to those of myocardial infarction and, although it usually has a good prognosis, it is not without complications. Our aim was to characterize this disease in our setting using a dedicated registry (Spanish REgistry for TAKOtsubo cardiomyopathy).
Methods: The prospective registry included 202 incident patients in 23 hospitals from 2012 to 2013. The patients' clinical characteristics and analytical, echocardiographic, and imaging results were recorded, as were the events during follow-up. Patients were included when the attending physician considered the case proven, and incidence was calculated relative to the catheterizations requested for a presumptive diagnosis of acute coronary syndrome.
Results: The patients were predominantly women (90%), with a mean age of 70 years, and many had cardiovascular risk factors, such as hypertension (67%), dyslipidemia (41%), diabetes mellitus (15%), and smoking (15%). The incidence of tako-tsubo cardiomyopathy was 1.2%, and there was no clear weekly or seasonal distribution pattern. Chest pain was the predominant symptom, a triggering factor (emotional, physical, or both) was present in 72%, and most patients consulted within the first 6 h after symptom onset. The median duration of hospitalization was 7 days. There were heart failure symptoms in 34.0%, arrhythmia in 26.7%, and 2.4% of patients died.
Conclusions: The incidence of tako-tsubo cardiomyopathy is low. This disease primarily affects postmenopausal women, and occurs after a situation of emotional stress in more than half of affected individuals. It is characterized by anginal pain, shows no seasonal distribution, and has a good prognosis, although it is not without morbidity and mortality.

Caracterización del síndrome de *tako-tsubo* en España: resultados del registro nacional RETAKO

Palabras clave:
Infarto
Síndrome coronario agudo
Síndrome de *tako-tsubo*
Registro
Pronóstico
Epidemiología

RESUMEN

Introducción y objetivos: El síndrome de *tako-tsubo* es una entidad de etiología y epidemiología inciertas, capaz de semejarse a un infarto y que, aunque suele tener buen pronóstico, no está exenta de complicaciones. El objetivo es caracterizar esta enfermedad en nuestro medio a través de un registro (REgistro nacional multicéntrico sobre síndome de TAKOtsubo).
Métodos: El registro prospectivo incluyó a 202 pacientes incidentes en 23 hospitales entre 2012-2013. Se recogieron las características clínicas, analíticas, electrocardiográficas y de imagen, así como los eventos durante el seguimiento. Se incluyó a los pacientes cuando sus médicos consideraron probado el caso, y la incidencia de la enfermedad se calculó en función de los cateterismos solicitados con el diagnóstico presunto de síndrome coronario agudo.

* Corresponding author: Instituto Cardiovascular, Hospital Clínico San Carlos, Avda. Prof. Martín Lagos s/n, 28040 Madrid, Spain.
E-mail address: ibnsky@yahoo.es (I.J. Núñez Gil).
◇ The RETAKO investigators are listed in the Appendix.

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Resultados: Los casos fueron predominantemente mujeres (90%), con una media de edad de 70 años y frecuentes factores de riesgo cardiovascular, hipertensión arterial (67%), dislipemia (41%), diabetes mellitus (15%) y tabaquismo (15%). Sin clara distribución semanal o estacional, se calculó una incidencia del 1,2%. El dolor torácico fue el síntoma predominante, con algún desencadenante (psíquico, físico o ambos) en el 72%, y la mayoría consultó en las primeras 6 h. La estancia mediana fue de 7 días; apareció algún síntoma de insuficiencia cardiaca en el 34,0% y arritmias en el 26,7% y murió el 2,4%.
Conclusiones: El síndrome de *tako-tsubo* es una enfermedad poco incidente, que afecta predominantemente a mujeres posmenopáusicas, en más de la mitad de los casos tras una situación psicológicamente estresante. Se caracteriza por dolor anginoso, sin distribución estacional; aunque no está exenta de morbimortalidad, conlleva buen pronóstico.

Abbreviations

RETAKO: Spanish REgistry for TAKOtsubo cardiomyopathy
TCM: tako-tsubo cardiomyopathy

INTRODUCTION

In 1990 in Japan, a syndrome was described consisting of chest pain, electrocardiographic and biochemical changes similar to those seen in acute myocardial infarction, and abnormalities of left ventricular apical contractility.[1] The peculiarity of this new disease, which was first attributed to multivessel spasm, was that the coronary arteries showed no lesions and the marked abnormalities of ventricular segments virtually resolved within a few days or weeks.[1,2] The syndrome was named tako-tsubo cardiomyopathy (TCM), apical ballooning, or transient apical dyskinesia. Compared with classic coronary syndromes, TCM is notable for regional involvement of various coronary territories and its excellent ultimate prognosis.[2,3] Nonetheless, although it is usually a benign condition, it is not without complications. The most common of these are heart failure, arrhythmia, intraventricular thrombi, and even death, mainly occurring in the acute phase.[4]

Various groups from Spain and other countries have reported case series consistent with these features,[1–6] including a description of the first series in Spain of the midventricular variant,[7] which is also recognized outside our country.[3] Other related articles from Spain have described patients with predominantly inferior ventricular involvement, and one has proposed the theory that the condition coincides with chronic ischemic heart disease.[8] Some authors have focused on the relationship between the left ventricular hypertrophy and the mid- to long-term outcome of these patients,[4] which may not be as benign as that of other patients with hypertrophic ventricles.[9] In addition, Spanish researchers have intensively investigated the pathophysiology of the syndrome and have proposed some interesting theories in this line, such as a wraparound left anterior descending artery,[5] or an effect of the intraventricular pressure gradient.[9] Other studies have compared the electrocardiographic findings according to race.[6,10]

Several hypotheses have been proposed to explain the etiopathogenesis of TCM.[11–14] Although it remains to be clarified, there seems to be an important relationship between the development of this syndrome and an excess of circulating catecholamines resulting from a situation of emotional or physical stress.[4,11] Nonetheless, the definitive cause of TCM is uncertain and precise epidemiologic data on this condition are not available in Spain, as most of the published articles report the experience of one or only a few centers.

The aim of this study was to create a collaborative, multicenter national registry of TCM cases with a view to describing this disease in more detail in our setting.

METHODS

The multicenter Spanish REgistry for TAKOtsubo cardomyopathy (RETAKO), created under the auspices of the Ischemic Heart Disease and Cardiovascular Acute Care Section of the Spanish Society of Cardiology, is a prospective, voluntary, national registry. It includes patients who meet the criteria for this disease (based on the modified Mayo criteria[15]) in the opinion of the attending physicians, as reported previously.[4] The present analysis included data on TCM patients consecutively hospitalized from (and including) 1 January 2012 to 31 December 2013, provided by 23 hospitals throughout the country (Table 1). The number of patients with this condition relative to the number of coronary angiographies requested in each hospital for the working diagnosis (subsequently confirmed or not) of acute coronary syndrome was calculated to determine the approximate incidence of this disease in our setting. The Registry collected information on the patients' clinical characteristics, complications during hospitalization, analytical results, and findings on electrocardiography, echocardiography, and other imaging techniques (magnetic resonance imaging was optional in the protocol). Initially, this information was recorded on a case report form and sent by e-mail to a data processing center, whereas later (after 2014), it was directly recorded on an on-line case report form. Some variables with aspects that were difficult to systematize were recorded on an open text field. To be included in the Registry, patients had to have undergone invasive coronary angiography that excluded significant obstructive lesions (> 50%) and any other potential cause of the clinical symptoms (eg, thrombus, dissection, ulcer). The treatment prescribed was always at the discretion of the attending physicians. At least 2 follow-up visits were recommended, one at 3 months and another at 1 year following the index event. Complete resolution of the regional wall motion abnormalities by any imaging technique was required, except in cases of death before the visit. The objectives investigated over follow-up were cardiovascular death, death due to any cause, and the need for readmission for any cause in a cardiology service. The study was approved by the Ethics Committee of Hospital Clínico San Carlos, and patients gave informed consent to participate in the Registry.

Statistical Analysis

Statistical processing was done with SPSS version 20.0 (IBM SPSS; United States) and the multimedia software package, Office 2010 (Microsoft; United States). Data are expressed as the