JACC: CASE REPORTS VOL. 2, NO. 5, 2020

IMAGING VIGNETTE

BEGINNER

CLINICAL VIGNETTE

Unexpected or Nonsuspected?

A Rare Cause of Recovered Left Ventricular Ejection Fraction After ECMO

Carolina Pemberthy, MD,[a] Catalina Gallego, MD,[b] Juan-David Uribe, MD,[c] Leidy Tamayo, MD,[c] Clara Saldarriaga, MD[a,b,d]

ABSTRACT

Acute heart failure represents a challenge, especially in infrequent etiologies. We present the clinical case of a young woman diagnosed with acute heart failure and cardiogenic shock. Pheocromocytoma was identified as a reversible etiology. The surgical treatment led to a complete recovery of cardiac function. (**Level of Difficulty: Beginner.**)
(J Am Coll Cardiol Case Rep 2020;2:832–4) © 2020 The Authors. Published by Elsevier on behalf of the American College of Cardiology Foundation. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

A 24-year-old woman without relevant past medical history presented to the emergency room after 6 days of flu-like symptoms. In the last 24 h, she also presented dyspnea, hot flashes, and palpitations. The physical examination was relevant for hypertension and tachycardia. The electrocardiogram showed supraventricular tachycardia that was treated with adenosine and labetalol returning to sinus rhythm. Two hours later, she had signs of peripheral hypoperfusion and low oxygen saturation. Laboratory tests were performed, and hypothyroidism, pneumonia, and pulmonary embolism were ruled out. The transthoracic echocardiography showed ejection fraction (EF) 20%, left atrial dilatation, and global hyperkinesia. The patient was transferred to the intensive care unit with cardiogenic shock after a cardiac arrest and developed multiorgan dysfunction; she required vasopressor, inotropic, and venoarterial extracorporeal membrane oxygenation support for 5 days. Her medical condition improved, but her blood pressure was difficult to control. A new echocardiography showed improvement of left ventricular EF to 60%, and cardiac magnetic resonance imaging ruled out myocarditis. The 24-h urine methanephrines tested positive, and the abdominal contrast magnetic resonance showed a left adrenal gland lesion compatible with pheochromocytoma (**Figures 1A and 1B**). The metaiodo- benzyl-guanidine scintigraphy showed signs of left adrenal gland neuroendocrine tumor (**Figures 1C and 1D**). The patient underwent radical left adrenalectomy and histopathology

From the [a]Cardiology Department, Universidad Pontificia Bolivariana, Medellin, Colombia; [b]Cardiology Department, Clinica Cardio VID, Medellin, Colombia; [c]Intensive Care Department, Clinica Cardio VID, Medellin, Colombia; and the [d]Cardiology Department, Universidad de Antioquia, Medellin, Colombia. The authors have reported that they have no relationships relevant to the contents of this paper to disclose.

The authors attest they are in compliance with human studies committees and animal welfare regulations of the authors' institutions and Food and Drug Administration guidelines, including patient consent where appropriate. For more information, visit the *JACC: Case Reports* author instructions page.

Manuscript received November 1, 2019; revised manuscript received February 28, 2020, accepted March 4, 2020.

ISSN 2666-0849 https://doi.org/10.1016/j.jaccas.2020.03.030

confirmed the diagnosis of pheochromocytoma. The patient improved her medical condition: after surgery she did not require antihypertensive medication, and was completely asymptomatic. During the follow-up period, she did not present heart failure manifestations, and the N-terminal pro-B-type natriuretic peptide and EF returned to normal values.

ABBREVIATIONS AND ACRONYMS

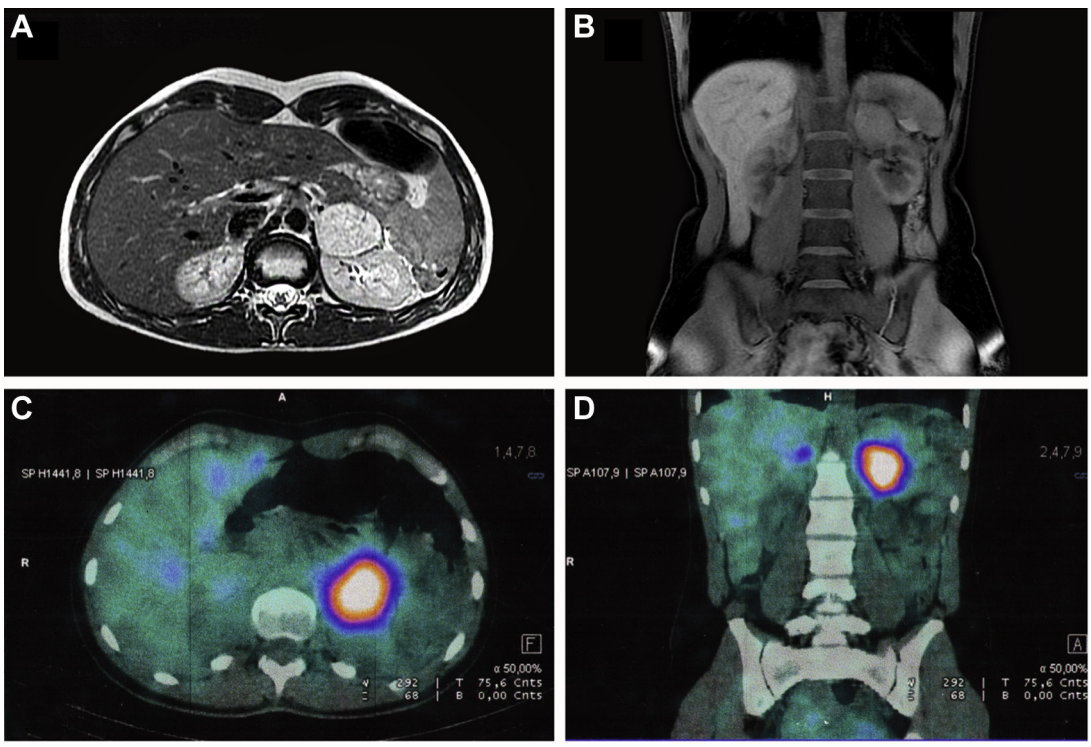
EF = ejection fraction

Cardiomyopathy induced by pheochromocytoma represents a barely recognized entity. It has diverse clinical manifestations: Takotsubo syndrome, myocarditis, and dilated cardiomyopathy. The clinical presentation is variable: hypertension is the most frequent (65%), and the classical triad (headache, palpitations, and diaphoresis) is described in 4% (1). There are few reports of patients who present cardiogenic shock (2), but the predominance of multiorgan failure over catecholamine excess symptoms is frequently described (1). In this case, dobutamine could contribute to the evolution because of its potential to induce shock in patients with pheochromocytoma (2). The pheochromocytoma resection is associated with improvement of ventricular function in 96% of cases. The lack of intervention is related to an increase in mortality (33%), heart transplant (11%), and serious adverse events (44%) (1).

Pheocromocytoma-induced cardiomyopathy represents a potentially reversible disease. The diagnosis implies an early suspicion in cases of heart failure without clear etiology, even in the absence of classical symptoms of catecholamine excessive stimulation. Pheocromocytoma resection can prevent progression to irreversible cardiac remodeling and adverse outcomes.

ADDRESS FOR CORRESPONDENCE: Dr. Carolina Pemberthy López, Universidad Pontificia Bolivariana, Cardiology, St. 78b #72a-159, Medellin, Antioquia 050034, Colombia. E-mail: caropember@gmail.com.

FIGURE 1 Adrenal Mass: Pheochromocytoma



(A and B) Abdominal contrast magnetic resonance showed a left adrenal gland lesion. **(C and D)** The metaiodo-benzyl-guanidine scintigraphy showed signs of left adrenal gland neuroendocrine tumor.

JACC: CASE REPORTS, VOL. 2, NO. 5, 2020
MAY 2020:832–4

REFERENCES

1. Zhang R, Gupta D, Albert SG. Pheochromocytoma as a reversible cause of cardiomyopathy: analysis and review of the literature. Int J Cardiol 2017;249:319–23.

2. Pereira-da-Silva T, Abreu J, Ramos R, et al. Unexpected triggers for pheochromocytoma-induced recurrent heart failure. Int Arch Med 2014;7:30.

KEY WORDS acute heart failure, cardiomyopathy, ejection fraction