

Last, according to previous publications,^{2,3} upright evaluation before exercise detected some patients with obstruction, a fact that was not present or was not presented in this paper. The reduction of preload in the upright position is an important stimulus for inducing left ventricular outflow tract obstruction, not only in HC but also in other conditions.^{5,6}

Tome Esteban,⁷ in an editorial referring to the present paper, also underscored the importance of the use of a protocol that maximizes the factors that provoke obstruction in HC patients.

We think that future guidelines of scientific societies should clearly recommend an uniform methodology to be employed by all groups that study and treat this class of patients with the purpose that a common language may be used by all study groups in the future.

Carlos Cotrim,^{a,*} Pawel Petkow Dimitrow,^b and Tsung O. Cheng^c

^aServiço de Cardiologia, Hospital Garcia de Orta, Almada, Portugal

^bDepartment of Cardiology, Collegium Medicum, Jagiellonian University, Cracow, Poland

^cGeorge Washington University Medical Center, Washington DC, United States

*Corresponding author:

E-mail address: carlosadcotrim@hotmail.com (C. Cotrim).

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REFERENCES

1. De la Morena G, Caro C, Saura D, Marín F, Gimeno JR, González J, et al. Eco-Doppler de ejercicio en pacientes con miocardiopatía hipertrófica. Factores determinantes de la limitación funcional. *Rev Esp Cardiol*. 2013;66:98-103.
2. Cotrim C, Loureiro MJ, Simoes O, Miranda R, Cordeiro P, Ialá M, et al. Evaluation of hypertrophic obstructive cardiomyopathy by exercise stress echocardiography. New methodology. *Rev Port Cardiol*. 2005;24:1319-27.
3. Miranda R, Cotrim C, Cardim N, Almeida S, Lopes L, Loureiro MJ, et al. Evaluation of left ventricular outflow tract gradient during treadmill exercise and in recovery period in orthostatic position, in patients with hypertrophic cardiomyopathy. *Cardiovasc Ultrasound*. 2008;6:19.
4. Dimitrow PP, Bober M, Michalowska J, Sorysz D. Left ventricular outflow tract gradient provoked by upright position or exercise in treated patients with hypertrophic cardiomyopathy without obstruction at rest. *Echocardiography*. 2009;26:513-20.
5. Dimitrow PP, Cheng TO. Standing position alone or in combination with exercise as a stress test to provoke left ventricular outflow tract gradient in hypertrophic cardiomyopathy and other conditions. *Int J Cardiol*. 2010;143:219-22.
6. Dimitrow PP, Michalowska J, Sorysz D. The effect of hemodialysis on left ventricular outflow tract gradient. *Echocardiography*. 2010;27:603-7.
7. Tome Esteban MT. Evaluación dinámica de la capacidad funcional y la limitación con el esfuerzo de los pacientes con miocardiopatía hipertrófica. *Rev Esp Cardiol*. 2013;66:83-4.

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Exercise Echocardiography in Hypertrophic Cardiomyopathy: Is Upright Evaluation Needed After All? Response

Ecocardiografía de ejercicio en pacientes con miocardiopatía hipertrófica. ¿La evaluación ortostática es necesaria después de todo? Respuesta

To the Editor,

The authors of the letter state that patient evaluation during exercise in an upright position may provide the most sensitive detection of latent obstruction in patients with hypertrophic cardiomyopathy. On the basis of this observation, they point out the possibility that our study¹ may have underestimated the number of patients with obstructive forms. Their reasoning is based on 2 reports^{2,3} involving a small number of patients (17 and 37, respectively) who underwent submaximal tests. In these tests, the authors observed, in just 7 cases, that the obstruction was detectable only after exercise in an upright position and disappeared within a few seconds of changing to the supine position.

We carried out symptom-limited tests and prefer the decubitus position, since we evaluate diastolic flow and left ventricular outflow tract flow. Our method enables us to obtain 2-dimensional and Doppler images within a little over 1 min after exercise. Knowing that the obstruction is fleeting, we always begin with color-guided continuous wave Doppler. In some cases, the obstruction may have disappeared; however, in the absence of sound comparative studies with maximum exercise tests that reveal the frequency of this event and time elapsed before it occurs, we consider it quite unlikely that an obstruction occurred in a significant number of our patients.

Nevertheless, and taking into account our results demonstrating that it is more important to determine the presence of obstruction than to quantify the degree,¹ we have modified our protocol and, coinciding with the authors of the letter, we focus on evaluating the presence of obstruction at peak exercise and during the immediate postexercise period, maintaining the upright position.

Gonzalo de la Morena*

Servicio de Cardiología, Hospital Universitario Virgen de la Arrixaca, Murcia, Spain

*Corresponding author:

E-mail address: gdlmorena@yahoo.es

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REFERENCES

1. De la Morena G, Caro C, Saura D, Marín F, Gimeno JR, González J, et al. Eco-Doppler de ejercicio en pacientes con miocardiopatía hipertrófica. Factores determinantes de la limitación funcional. *Rev Esp Cardiol*. 2013;66:98-103.
2. Miranda R, Cotrim C, Cardim N, Almeida S, Lopes L, Loureiro MJ, et al. Evaluation of left ventricular outflow tract gradient during treadmill exercise and in recovery period in orthostatic position, in patients with hypertrophic cardiomyopathy. *Cardiovasc Ultrasound*. 2008;6:19.
3. Dimitrow PP, Bober M, Michalowska J, Sorysz D. Left ventricular outflow tract gradient provoked by upright position or exercise in treated patients with hypertrophic cardiomyopathy without obstruction at rest. *Echocardiography*. 2009;26:513-20.

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