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Commentary: Latent hypertrophic obstructive cardiomyopathy—(un)clear and present danger

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CENTRAL MESSAGE

Low resting gradients in patients suspected of outflow tract obstruction should not breed complacency. Provocative measures can reveal significant obstruction that is amenable to surgical relief.

Biologic latency is defined as something that is hidden until circumstances are suitable for development or manifestation. Inherent to latency is the fact that a disease can be difficult to diagnosis, often leading to a long period before implementing appropriate treatment. In their report published in this issue of the *Journal*, investigators at the Mayo Clinic leverage their historical infrastructure and experience related to hypertrophic obstructive cardiomyopathy (HOCM) to examine a sneaky subpopulation of patients with latent left ventricular outflow tract obstruction (LVOT).¹

One of the many take-home messages is that the physician/surgeon has to look for latent HOCM—it is dormant, like the word says. When evaluating patients with ongoing symptoms, one should not be complacent about a low resting LVOT gradient. Lying flat on a table is not when these patients have trouble. Using a series of well-protocolized provocative maneuvers by echocardiography (Valsalva, amyl nitrate), catheterization (isoproterenol infusion), and intraoperatively (inducible premature ventricular contractions, isoproterenol infusion), they demonstrate that low gradients can dramatically increase, not just beyond the defined cutoff of 30 mm Hg, but with some as high as 200 mm Hg.

Importantly, this “new” obstruction is almost always associated with systolic anterior motion of the mitral valve and often with worsening mitral regurgitation. Although the authors have long professed that myectomy

has proven sufficient in most patients with HOCM, others have suggested that addressing the mitral valve is an important component of the assessment and treatment of these patients.^{2,3} Only 8.3% of the latent group and 5.2% of the resting group had undergone mitral repair. Although not mentioned in the article, but of interest to the reader, these repairs included annuloplasty (n = 62), leaflet plication (n = 26), Alfieri stitch (n = 22), leaflet resection (n = 22), and cleft closure or artificial chordae (n = 23). The authors claim that these interventions were not for relief of the LVOT, but rather to treat mitral regurgitation. Quite likely, this serves a dual purpose, as most of these mitral valves have elongated anterior leaflets that can be addressed during the repair process.

An additional caveat worth noting is that their conclusion trying to link functional outcomes to the therapy in the latent patients is confounded by the fact that there were no preoperative surveys and only 346 of 629 patients returned surveys, thereby introducing bias regarding long-term outcomes. They have recently reported a more robust review of their functional outcomes for their entire cohort,⁴ but in the current study, 15% to 20% reported poor outcomes and remained in class III/IV heart failure. Does this mean that 1 in 5 patients should not have undergone surgery? Indeed, outflow

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obstruction is not always the problem with HOCM. However, it would be good to further dissect some of the issues related to those latent patients that did not thrive after surgery.

Summarily, identifying latent HOCM patients is not always clear but remains threatening. As once again nicely described by the Mayo group, one needs to look for it; if you find it, it is treatable and can provide long-term relief for your patient.

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Commentary: Latent messages in a study for latent gradient in hypertrophic cardiomyopathy

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Left ventricular outflow tract obstruction (LVOTO) is a dynamic process involving the septal anatomy and anterior mitral leaflet, and is sensitive to LV load and contraction. The 2020 American Heart Association/American College of Cardiology guideline for hypertrophic cardiomyopathy (HCM) states, “Spontaneous variability in the LVOT gradient can occur with daily activities, food and alcohol intake, or even with quiet respiration. Thus, provocative maneuvers may be necessary in patients with low or absent peak resting gradients (ie, <30 mm Hg) to elicit

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CENTRAL MESSAGE

Patients with latent left ventricular outflow tract gradient may benefit from surgical septal myectomy similar to those with more overt gradient.

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the presence of LVOTO, particularly in patients with symptoms.”¹

Ciu and colleagues² from the Mayo Clinic, in a study that includes the key authors of the 2020 HCM guideline, focus on latent LVOT obstruction. Among patients who had undergone septal myectomy, 629 patients with latent obstruction, resting LVOT gradient <30 mm Hg, and provoked gradient >30 mm Hg, were compared with 1352 patients with resting obstruction. The latent obstruction group had thinner septums (median, 16 mm) compared with the controls (median, 18 mm). Preoperative cardiopulmonary capacity was similarly impaired before surgery, and equally improved afterward.