

Optimal echocardiographic ramp testing during left ventricular assist device supports

In addition to the pharmacological treatment, a device speed adjustment should be another essential therapeutic tool to reduce comorbidity-related readmission rates during left ventricular assist device (LVAD) support, even in the era of HeartMate 3 (Abbott, Lake Bluff, IL, USA). However, the optimal strategy to adequately adjust device speed remains controversial. Najjar *et al.*¹ demonstrated that the echocardiographic ramp test with LVAD speed adjustment improved left ventricular unloading. As an author of Ramp-it-Up study that prospectively compared haemodynamics vs. echocardiographic ramp tests,² I have several concerns.

The recommendation of current guidelines to adjust device speed is ambiguous: adequately unload left ventricle while maintaining minimal/mild mitral regurgitation and intermittent aortic valve opening.³ In the same manner, the goal of device speed adjustment in their study might be unclear: adequate left ventricular unloading, which was defined as (i) no more than mild mitral regurgitation, (ii) intermittent aortic valve opening or closed aortic valve, and (iii) reduction in left ventricular end-diastolic diameter.¹ On the basis of their protocol, we might increase device speed up to the maximum setting unless any sucking events.


The reduced left ventricular size, one of the targets for device speed adjustment,¹ might be a relative outcome, and

more absolute value such as the ratio between early mitral inflow velocity and mitral annular early diastolic velocity might be more appropriate target. Also, closed or intermittently opened aortic valve, another target of device speed adjustment,¹ would not apply to those achieving left ventricular reverse remodelling together with cardiac unloading.

Although NT-pro B-type natriuretic peptide levels decreased in most of ramp test participants,¹ the study lacks comparison analysis. A comparison in the B-type natriuretic peptide levels between those with and without left ventricular unloading would clarify the implication of left ventricular unloading.

Funding

T.I. receives grant support from JSPS KAKENHI: JP20K17143.

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