The risks associated with both acute and chronic use of intravenous inotropic agents are widely recognized. However, for some patients with severe hypotension or inadequate diuretic response, inotropic therapy is initiated during hospitalization and continued as an outpatient if weaning attempts are unsuccessful. Use of intravenous inotropic agents for refractory symptoms in stage D heart failure has received a class IIb indication.

The phosphodiesterase III inhibitor milrinone increases cardiac output and reduces systemic vascular resistance and pulmonary capillary wedge pressures in patients with advanced heart failure. The drug has been described to exert these hemodynamic effects with less increase in heart rate or myocardial oxygen consumption than β-adrenergic inotropic agents such as dobutamine. It may also be more effective than dobutamine in the presence of downregulation of the myocardial β-adrenoreceptors because of either high-intrinsic sympathetic tone or β-adrenergic blocking agents.

However, PROMISE, which analyzed 1088 patients with severe chronic heart failure (New York Heart Association class III or IV), showed that compared with placebo, oral milrinone increased hospitalizations, mortality from all causes by 28% and cardiovascular mortality by 34%. In the largest randomized trial of intravenous milrinone, Outcomes of a Prospective Trial of Intravenous Milrinone for Exacerbations of Chronic Heart Failure (OPTIME-CHF) Investigators. Short-term intravenous milrinone for acute exacerbation of chronic heart failure: a randomized controlled trial. JAMA. 2002;287:1541–1547.

The criteria for determining “dependence” on intravenous inotropic infusion can be debated. However, for patients who need continuous inotropic therapy, is milrinone better?
The question posed in this issue by Dr. Kato and his colleagues is commonly faced during the care of patients with stage D heart failure. A lucky few of these patients may be eligible for cardiac transplantation, in which case outpatient inotropic infusions may be considered as a route to cardiac transplantation if body size and blood group predict a short waiting time. Other selected patients with relative or reversible contraindications to transplantation may receive inotropic therapy as a bridge to a later decision. Most absolute contraindications to transplantation also compromise outcomes with implantable ventricular assist devices. However, a perceived need for chronic inotropic support in the absence of major noncardiac morbidity should always trigger consideration of mechanical circulatory devices as durable or destination therapy, if adequate support can be provided with a left ventricular device alone. Most commonly, the decision to offer chronic intravenous inotropic therapy follows failure to wean inotropic therapy intended for only a brief course during hospitalization, in patients who have no surgical option. What is the anticipated outcome in these patients, and is it better with milrinone or dobutamine?

Although the intent of this “Challenges for the Basis of Practice” section is to invite practical responses to guide us in the absence of a basis of evidence, we were fortunate to receive this question at the same time a thoughtful analysis by Gorodeski and colleagues of a carefully followed cohort of patients on chronic inotropic infusions was submitted. The editors consider that this article provides the best answer available to the current challenge. As always, we welcome opposing or supporting opinions in response from others who also face this challenge in their practice.
Should We Use Outpatient Dobutamine or Milrinone?
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