

News and Views from the Literature

Heart Failure

Nesiritide for Acute Decompensated Heart Failure

**Reviewed by Norman E. Lepor, MD,
FACC, FAHA, FSCAI**

*The David Geffen School of Medicine at UCLA, Cedars-Sinai
Medical Center, Los Angeles, CA*

[*Rev Cardiovasc Med.* 2007;8(1):45-46]

© 2007 MedReviews, LLC

Effects of Perioperative Nesiritide in Patients With Left Ventricular Dysfunction Undergoing Cardiac Surgery. The NAPA Trial

Mentzer RM, Oz MC, Sladen RN, et al.

J Am Coll Cardiol. 2007;49(6):716-726

Nesiritide is a recombinant B-type natriuretic peptide indicated for the treatment of acute decompensated heart failure (ADHF). The basis for approval of this agent was the Vasodilatation in the Management of Acute Congestive Heart Failure (VMAC) trial, which compared the efficacy of intravenous nesiritide to that of intravenous nitroglycerin and placebo.¹ The VMAC trial found that nesiritide added to standard care provided more rapid normalization of hemodynamics and

symptoms more effectively in patients hospitalized for ADHF than did intravenous nitroglycerin and placebo. The 2006 guidelines of the Heart Failure Society of America include the use of nesiritide, nitroglycerin, or nitroprusside “as an addition to diuretic therapy for rapid improvement in congestion symptoms in patients admitted with ADHF.”² The lack of arrhythmogenic potential and the need for dose titration made nesiritide an attractive agent for use in patients with ADHF, with many patients treated in monitored, step-down units rather than in intensive care units (ICUs). Use of nesiritide had been tempered following the recent publication of a controversial meta-analysis showing a potential mortality risk.³

The Nesiritide Administered Peri-Anesthesia in Patients Undergoing Cardiac Surgery (NAPA) study was a prospective, double-blind, randomized trial of 270 patients undergoing coronary artery bypass surgery using cardiopulmonary bypass, who had left ventricular ejection fractions at or less than 40% and were in the New York Heart Association (NYHA) Class II or III.⁴ Researchers compared nesiritide to placebo in addition to usual care by evaluating 5 different endpoints: 1) change from baseline to peak serum creatinine by the end of the hospital stay or study day 14 (whichever came first); 2) change from baseline glomerular filtration rate (GFR) to the lowest GFR measured by the end of the hospital stay or study day 14 (whichever came first); 3) intravenous inotropic agent/vasopressor and vasodilator use; 4) change from baseline in pulmonary artery pressure for 24 hours after the start of the study drug; and 5) urinary output during the initial 24 hours after admission

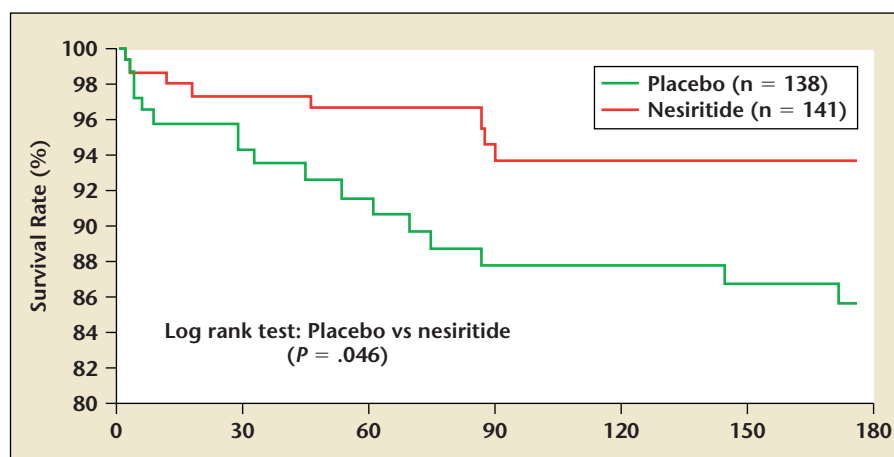


Figure 1. Kaplan-Meier survival curves to day 180 by treatment group. Reprinted with permission from Mentzer RM et al.⁴

to the ICU or until ICU discharge (whichever came first). Nearly 50% of the patients studied had diabetes, with a mean serum creatinine of 1.1 mg/dL and GFR of 80 mL/min/1.73 m². Cardiopulmonary bypass has been associated with perturbation of renal function.

Nesiritide was associated with a smaller rise in serum creatinine compared to placebo (0.15 mg/dL vs 0.34 g/dL; $P < .001$), a smaller decrease in GFR (-10.8 mL/min/1.73 m² vs -17.2 mL/min/1.73 m²; $P = .001$), and greater urine output (2926 mL vs 2350 mL; $P < .001$). In addition, nesiritide-treated patients had a trend toward a lower 30-day mortality and a significantly lower 180-day mortality (6.6% vs 14.7%; $P = .046$) (Figure 1).

The results of the NAPA trial show a positive effect on mortality and a protective effect on renal function, in contradistinction to what has been described in the previously mentioned meta-analysis. Perturbation of renal function has been associated with worse outcomes in patients with a variety of cardiovascular conditions, including heart failure. The results of this trial should provide considerable comfort to those concerned about the potential effects that nesiritide may have on renal function and mortality. This trial suggests a renal-preserving effect of nesiritide in patients with left ventricular systolic dysfunction undergoing coronary artery bypass surgery with cardiopulmonary bypass. Larger, sufficiently powered clinical trials are planned to further clarify the impact of nesiritide on mortality and renal function in patients with ADHF. ■

References

1. Publication Committee for the VMAC Investigators (Vasodilatation in the Management of Acute CHF). Intravenous nesiritide vs nitroglycerin for

treatment of decompensated congestive heart failure: a randomized controlled trial. *JAMA*. 2002;287:1531-1540.

2. Heart Failure Society of America. HFSA 2006 Comprehensive Heart Failure Practice Guideline. *J Card Fail*. 2006;12:e1-2.
3. Sackner-Bernstein JD, Kowalski M, Fox M, Aaronson K. Short-term risk of death after treatment with nesiritide for decompensated heart failure: a pooled analysis of randomized controlled trials. *JAMA*. 2005;293:1900-1905.
4. Mentzer RM, Oz MC, Sladen RN, et al. Effects of perioperative nesiritide in patients with left ventricular dysfunction undergoing cardiac surgery. The NAPA Trial. *J Am Coll Cardiol*. 2007;49:716-726.

Kidney Disease

Estimated Glomerular Filtration Rate: Why Is It Important?

Reviewed by Peter A. McCullough, MD, MPH, FACC, FACP, FCCP, FAHA

William Beaumont Hospital, Beaumont Health Center, Royal Oak, MI

[*Rev Cardiovasc Med*. 2007;8(1):46-49]

© 2007 MedReviews, LLC

Assessing Kidney Function—Measured and Estimated Glomerular Filtration Rate

Stevens LA, Coresh J, Greene T, Levey AS

N Engl J Med. 2006;354(23):2473-2483