Routine Measurement of Natriuretic Peptide to Guide the Diagnosis and Management of Chronic Heart Failure

To the Editor:

We read with interest the viewpoint of Dr Milton Packer in a recent editorial, accompanying a study examining the behavior of B-type natriuretic peptides in outpatients with congestive heart failure (CHF) 1.

Dr Packer suggested that B-type natriuretic peptides (BNPs) have not been shown to “improve upon the information derived from the patient-physician interaction” (p 2951). We disagree, citing data from the BNP (Breathing Not Properly) Multinational Study, 3 in which the results of the BNP testing were superior to clinical judgment for the detection of CHF among patients presenting in an urgent fashion. Similar results are now pending for NT-proBNP.

Dr Packer also asserted that no study has demonstrated that BNPs are superior to standard prognostic assessment in CHF. We would point out a recent study suggesting that N-terminal pro-BNP (NT-proBNP) results were superior to those of all methods for risk stratification among an outpatient heart failure population, even superior to the maximum oxygen uptake, which is the current gold standard for prognosticating outcomes in CHF. 4

We also feel that Dr Packer’s characterization of BNP-guided therapy of outpatients with CHF as “an intellectual crutch to remind physicians to practice optimal medicine” (p 2952) is incorrect. We point out that the care of CHF patients is more often in the hands of non-cardiovascular specialists who may find biomarker-guided therapy useful to guide or ensure optimal therapy. Further, even when CHF patients are managed by a cardiovascular specialist, data suggest that there is room for improvement. We point out that Dr Packer’s comments are directly contradicted by the accompanying study, 2 wherein only 57% of patients in a specialized CHF clinic were taking an β-blocking agent, and no mention was made regarding the rates of treatment with spironolactone or biventricular pacing, presumably because of low rates of use. Lastly, we do not suggest that patients with low BNP or NT-proBNP levels should have therapies of proven benefit withheld or used in a suboptimal fashion.

We enthusiastically agree with Dr Packer that we need to be excellent clinicians for our patients. We suggest, however, that in order to be excellent clinicians, we will need to continuously integrate our outstanding clinical skills with emerging tools that offer powerful diagnostic and prognostic information. As we learn more about BNP and NT-proBNP, we suggest that these markers will play an increasingly important role in the care of our patients with heart failure, without eroding the quality of care we deliver to these patients.

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To the Editor:

We read with great interest the recent article by Dr Packer concerning plasma brain natriuretic peptide (BNP) levels in chronic heart failure. He claims that routine measurement of plasma BNP is not useful for the diagnosis and management of heart failure because (1) BNP levels are affected by age; (2) BNP levels are influenced by sex, coronary artery disease, chronic pulmonary disease, pulmonary embolism, and renal insufficiency; and (3) it is consequently difficult to determine the diagnostic threshold of BNP for heart failure. Although Dr Packer’s statements are facts, we do not understand why he has singled out BNP. We do not know of any laboratory tests that have the same normal range or diagnostic threshold irrespective of factors such as age, sex, body size, or renal function. ECG findings in young subjects, heart size as assessed by chest radiography or echocardiography in young patients with heart failure, and diastolic function as assessed by Doppler examination in young subjects all differ from the respective values in adult or elderly subjects. Even in the same age range, body size affects left ventricular dimension and mass and therefore must be standardized mathematically. Renal function also changes in the elderly. We know that all of the above laboratory examinations are clinically useful only when we standardize them according to the clinical characteristics of patients. Why does Dr Packer have to regard BNP as an all-mighty laboratory test that should not be affected by demographic factors? It is natural to assume that similar BNP levels in young patients with heart failure and in elderly patients with hypertensive renal impairment most likely result from different pathophysiological mechanisms. Systolic blood pressure (SBP) is another good example. Everyone would agree that a SBP of 170 mm Hg in a 20-year-old patient has different clinical implications from the same SBP in a 70-year-old patient.

Therefore, when we evaluate BNP in individual patients with heart failure, it seems natural to take into consideration patients’ clinical characteristics, as we do for other laboratory examinations. It is inappropriate to focus solely on the specific diagnostic value of BNP. We should allow some latitude when determining the diagnostic implications of BNP, taking into account clinical factors such as age, sex, and renal insufficiency.

Dr Packer stated that the diagnosis and evaluation of heart failure is difficult because it relies on the scholarship, skills, and judgment of the practicing physician. We propose that the interpretation of BNP based on other clinical characteristics should be included in such scholarship; the task of a physician may thus be made slightly easier.

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Response

Drs Nishikimi and Matsuoka suggest that values for BNP need to be interpreted in light of age, gender, body size, and renal function. I agree, having made precisely this point in my editorial.1 Unfortunately, this is not what physicians have been told to do. The companies that market BNP assays and advocates for BNP testing have instructed physicians to use a single diagnostic threshold (100 pg/mL), regardless of demo-
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