

# Reflections on Heart Failure

Almost miraculous therapeutic achievements in cardiovascular medicine and an aging population have combined to produce increased prevalence of the heart failure syndrome. Treatment of heart conditions usually results in prolonged survival but with residual cardiac impairment and risk of ultimate heart failure. Improvement in heart failure treatment over the past 50 years has been both fortunate and gratifying. Current therapy is lucidly presented in this issue with "Evidence-Based Clinical Vignettes from the Care Management Institute: Heart Failure," by Anthony Steimle, MD,<sup>1</sup> and in the Northern California treatment protocols.<sup>2</sup>

Effective treatment of heart failure, especially acute failure, was available in the 1950s. For acute pulmonary edema, we used morphine, digitalis, mercurial diuretics, oxygen, and rotating tourniquets. Randomized controlled trial data were absent, but observation of dramatic transformation of a pale, cyanotic, bubbling, sweating man or woman, gasping for air into comfortable individuals was convincing evidence that benefit had occurred. Chronic heart failure treatment—consisting of digoxin, diuretics, and sodium/fluid restriction—was less effective and had a 50% expectation of death within a year.

Evolution of heart failure treatment started with better diuretics in the late 1950s. Soon thereafter came aldosterone antagonism with spironolactone; vasodilator therapy was next. Advances in the past 20 years include blockade of the renin-angiotensin-aldosterone and sympathetic nervous systems. We now have controlled trial proof of

benefit for all accepted drug treatments except diuretics (universally deemed essential for symptom relief). Polypharmacy rules the day.

Circulatory physiology has long been a focus of intensive research and debate. Heart failure teaching included various dichotomies; "forward" vs "backward," "right-sided" vs "left-sided," "high-output" vs "low-output" failure. All can be understood as manifestations of the heart's inability to pump adequately for the body's requirements at the time—the definition of heart failure in Dr Steimle's article. The dichotomies are useful in understanding specific patients, but one fact indelibly drilled into all of us was that left ventricular failure is the common-est cause of right ventricular failure.

The current dichotomy of interest is "systolic" vs "diastolic" dysfunction. The concept is not new; a 1950s description divided heart failure into "primary disorders of filling and primary disorders of emptying."<sup>3</sup> Echocardiography has shown us that a large proportion of heart failure patients apparently have a primary filling disorder. The diastolic/systolic distinction is often unclear, because both frequently coexist, and many patients progress from the former to the latter. Unfortunately, systolic dysfunction was made an entry requirement for most heart failure treatment trials, leaving uncertainty that the drugs work with diastolic dysfunction. Curiously, the evidence for benefit in diastolic dysfunction is best for digoxin, with which similar reduction occurs in hospitalization risk for patients with systolic as well as diastolic dysfunction.<sup>4</sup>

In recent years, the addition of heart failure case management programs has significantly and economically enhanced patient care. The highly trained, accessible practitioner provides patient education, psychosocial support, expert assessment of the patient's condition, and medication management.

We will see more advances in treatment of advanced heart failure, but a longer view of the future should look elsewhere. Molecular genetics will continue to cast light upon predisposing factors and prevention of some cases, most notably those due to certain factors of cardiomyopathy. Control of heart failure risk factors, especially hypertension and atherosclerotic coronary disease, would seem obvious keys to progress. We know much about how to do this, but, ironically, we are fighting a growing epidemic of obesity and diabetes in young people. Because increasing numbers of people with damaged hearts will survive into old age, we will be managing heart failure for a long time to come. ♦

## References

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