

## Editorial

# Comments on Progress, Medical Care, and the Overuse of Technology

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It is easy to be critical of opinions that appear on the surface to take a stand against progress or to be anti-intellectual or antiacademic—yet these opinions are often based on sound judgment, clinical experience, and good data.

For many years, physicians have been bombarded with the concept that new is better and that to treat patients intelligently, numerous analyses and diagnostic studies must be performed. Students and house officers no longer take the time to analyze cardiac murmurs; after all, they can always order an echocardiogram. How often is this really necessary? If a person experiences any kind of discomfort between the waist and the shoulders, an ECG, stress test, and invariably a thallium stress test are done. This frequently leads to a cascade of further testing, including an angiogram. Perhaps a careful history might have determined that a muscle strain was the cause of the discomfort.

Clinical judgment has frequently been pushed out of the diagnostic equation. There are many instances of a patient with an obvious tension headache being referred for an MRI to rule out a brain tumor when a careful history might have revealed an acute, stressful situation, which should have been handled in a different manner. Patients without any other symptoms except minimal hearing loss that is obviously the result of aging are referred for CT scans or an MRI to rule out a brain tumor. These and many other newer technologies are useful, and they have improved the treatment of many diseases, but they are being overused. Sources of the problem include the fear of litigation, patients' expectations, the economics

of practice, and pressures from thought leaders to stay up-to-date.

## PROCEDURES AND THE MANAGEMENT OF HYPERTENSION

Through the years, the management of hypertension has largely remained free of technology abuse. But there are pressures to change and to complicate our approach. Although one might argue that the heterogeneity of this disease with multiple causations should require a careful physiologic evaluation before treatment, the bottom line is that most of the large clinical trials and other treatment studies have repeatedly proven that outcome is improved in a large majority of cases by just reducing blood pressure (BP)—without extensive pretreatment testing. This is true in the young and old and in different racial and gender groups. We tend to forget that all of the early, successful treatment trials before the availability of medications that may have specific effects on vascular functions, nitric oxide, etc., were simply studies to reduce BP. Considerations of other risk factors or specific treatment effects of therapy on enzyme systems, smooth muscle growth, or endothelial dysfunction were not part of the protocols. As BP was reduced, abnormalities in various organs were improved; proteinuria disappeared, progression of renal disease was slowed, left ventricular hypertrophy regressed, and strokes and heart failure were prevented—just by lowering the BP. It is true that as new and more specific medications with the potential for fewer adverse effects became available, treatment outcomes improved; combining these newer therapies with other medications has improved outcome still further—again, without the



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interposition of extensive testing. With the exception of certain subsets of patients with diabetes and renal disease, most of the benefit of therapy is still achieved by simply lowering the BP. The approach to the treatment of hypertension has, should, and can be uncomplicated and relatively inexpensive. A great majority of hypertensives who are being inadequately treated can be treated effectively by proper use of presently available therapies. More specific evaluations should be reserved for truly resistant patients.

Some experts tell us that we must find better methods to define therapy because we have done a poor job of treating the majority of patients. They suggest that it is not enough to guide treatment with casual office or clinic BPs, although all of the epidemiologic and clinical trial data are based on these BPs. The higher the casual BP in epidemiologic studies, the poorer the outcome; the lower the BP in the clinical trials, the better the outcome. Physicians are advised that ambulatory blood pressure monitoring (ABPM) is now necessary to evaluate 24-hour BPs. Yes, ABPM has provided us with interesting data; it has confirmed the fact that BP in some patients does not decrease at night as much as in other patients, and that this lack of dipping during the night is associated with more evidence of target organ involvement, especially left ventricular hypertrophy. But these facts were known as far back as 1921, when it was determined, based on more invasive studies, that there were patients whose BP remained elevated at night. ABPM is useful in determining the duration of action of various drugs, but it is not necessary to evaluate patients either for prognosis or to judge responsiveness to various medications. Home BPs provide an ongoing record of BPs at less expense and serve to reinforce the need for and benefits of therapy.

There are advocates of specific physiologic testing in hypertensive patients who have argued that since hypertension may have many causes and patients differ physiologically, it is necessary to measure cardiac output and vascular resistance to choose specific treatments more scientifically. But are there data to indicate that this is really necessary for successful management? The latest in the series of recommendations to complicate the life of the practicing physician is to use impedance cardiography (ICG) as a guide to therapy.

Numerous studies with invasive or noninvasive procedures have indeed demonstrated distinct hemodynamic subsets among groups of patients with hypertension. These studies have differentiated patients with elevated cardiac output from

patients in whom elevated systemic vascular resistance is the primary mechanism for BP elevation. Analyses indicating that in a younger patient an increase in cardiac output, whereas in older people an increase in vascular resistance, is the major factor in causing hypertension may be too simplistic. ICG is being advocated to evaluate and define exact hemodynamic parameters in various hypertensive populations. This procedure has confirmed that increasing age is associated with increasing systemic vascular resistance and that cardiac output changes in older people are not responsible for increased BP. Advocates of this procedure note that if we do not measure hemodynamic changes, we are delaying progress. They argue that with only approximately one third of hypertensive patients in the United States controlled at goal BP levels of below 140/90 mm Hg, the use of specific hemodynamic measurements will improve outcome.

Several studies have reported results which on the surface appear to be quite good; following patients with ICG seems to improve outcome. But when one examines the improvements noted in patients followed with this technique, the percentage improvement in achieving goal BPs is no greater than for patients with resistant hypertension whose medications were changed on the basis of clinical judgment and who did not undergo physiologic studies.<sup>1,2</sup> More careful attention to the use of specific medications, especially the appropriate use of diuretics, resulted in a major increase in response rates. One study reported that the use of ICG served as a guide to change medications and achieve a more favorable outcome, and that “specifically based on findings in systemic vascular resistance, an increase in diuretic therapy was instituted”—the same conclusions reached in studies where patients did not undergo specific physiologic studies.<sup>2</sup>

There is little doubt that ICG can define certain subsets of patients with different physiologic profiles; however, from a practical point of view, physicians can manage patients effectively without the considerable cost of this approach. Additional careful comparisons of treatment results with and without ICG and more widespread agreement among experts are necessary before the use of this procedure is considered “now necessary” as recently promoted.<sup>3</sup> The pressures to purchase and use this and other procedures from industry or physicians involved in studying them are considerable.

Criticism of physicians who defend older medications such as diuretics or those who do not advocate the use of routine echocardiography, renin studies,

or ABPM in the management of hypertension has centered on their credibility as academics or scientists. They have been deemed to be against progress. The most recent report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7) has not, however, recommended these procedures as routine in the evaluation of a hypertensive patient.<sup>4</sup>

The new critiques center on physicians who do not use physiologic measurements such as aortic compliance studies and measurement of cardiac output. As noted, a careful review of available data does not indicate that these procedures are necessary in the management of a large majority of hypertensive patients.

Medical care has become too complicated and expensive. The cost of medical care, rather than Social Security, is the major problem responsible for increasing budget deficits and concern about the future. We should be grateful that CT scans and MRI scans are available—but they are being overused. We should be grateful that echocardiography is available to define specific valve states preoperatively and help in managing patients with heart failure—but this procedure is being overused. We should be grateful that ABPM is available when there is a specific problem and to define the duration of action of various medications; this is

a useful tool for research, but it is not necessary for routine evaluation. We should be aware that techniques such as ICG and other techniques that measure levels of aortic compliance may be of interest in research investigations, but also that they are not necessary for effective treatment. Physicians who do not use these procedures are not antiacademic or antiprogress; almost all patients can be treated effectively without them. We should continue to keep the management of hypertension as uncomplicated and cost effective as possible. Additional patient and physician education, and reducing physician inertia in the use of available medications with different actions in appropriate combinations, will improve the percentage of patients treated to goal—not more and more cost and the use of more and more procedures.

#### REFERENCES

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