EDITORIALS

Changing Concepts of Ischemic Heart Disease: A Form of "Future Shock"

Should a community hospital enter the field of cardiac catheterization and cardiac surgery? How can we minimize the risks of coronary arteriography? What are the indications for coronary artery surgery? These are fundamental questions regarding the management of patients with ischemic heart disease for which one can offer only preliminary answers.

The accelerating demands for coronary arteriography and direct coronary artery surgery suggest that historic changes have taken place in the practice of medicine. In 1969, we attempted to estimate the volume of coronary arteriography which might be eventually performed in our new hospital, then in the planning stages. A reasonable figure appeared to be 1,000 procedures per year or triple the volume present in 1969. Actually, approximately 3,000 procedures were performed the first year after the new hospital was opened. Nearly 1,000 cardiac operations were performed after these diagnostic procedures were completed.

Were there sound indications for these diagnostic procedures and the surgical interventions which followed? To evaluate this challenging inquiry, let us first examine the words, “angina pectoris,” since these two words have exerted a historic influence on our efforts to communicate in the realm of ischemic heart disease. The term, angina pectoris, has been used in medical communications for more than 300 years. Long overdue is the realization that angina pectoris is not a disease and, therefore, should not be treated as a disease. Angina pectoris is one of many clinical expressions of underlying pathophysiologic phenomena. Other expressions of the same processes are sudden death, myocardial infarction, congestive heart failure, and arrhythmias. It is no more rational to “treat angina pectoris” than it was for my grandfather to “treat fever.” Some of my grandfather’s patients with “fever” died, and some recovered. Varying outcomes were related to the different but clinically indistinguishable causes of “fever” and the practice of treating all “fever” in the same manner. Why should the prognosis and treatment of chest pain characterized as angina pectoris be identical if it occurs in one patient with advanced stenosis of the main left coronary artery, in another individual with a single isolated secondary branch stenosis, in a patient with diffuse distal vessel disease, and in yet another subject with angiographically normal coronary arteries? What distinguishes the chest pain noted transiently before a lethal myocardial infarction from that which will remain stable for 15 years? These considerations should be part of any report on diagnosis and therapy, and yet we continue to read papers and hear presentations at national symposia which describe the “treatment of angina pectoris” in an absence of anatomic and pathophysiologic definitions.

To pursue these concepts is to analyze the legitimacy of coronary arteriography as a routine tool in the management of patients with known or suspected ischemic heart disease. Let us consider this question by posing another question. Under what circumstances would lack of angiographic and physiologic information prove superior to possession of such information in advising patients with known or suspected ischemic heart disease? Is it possible that such a circumstance exists? The usual response to this question is that we cannot justify subjecting all patients to the risks of the procedure. Perhaps we should ask if we can justify managing certain patients with known or suspected ischemic heart disease in the absence of angiographic and physiologic data. Which carries the greatest risk, coronary arteriography or ischemic heart disease? Six hundred thousand individuals die of ischemic heart disease in the United States each year; and, on the other hand, untold thousands of people live in constant fear because of an erroneous diagnosis of coronary heart disease. What degree of risk is permissible for a diagnostic procedure if improved diagnosis permits a change in management which significantly improves prognosis? Unfortunately, current views of the risks involved have been enormously influenced by sources reporting incidences of morbidity and
mortality which would have been totally unacceptable in this hospital in recent years. We have had two deaths in this community hospital among our last 3,000 patients undergoing selective coronary arteriography. Both patients had resting crescendo angina pectoris and severe main left coronary artery obstructions. The in-hospital surgical mortality among our first 1,600 patients undergoing surgery for ischemic heart disease is 1.7 percent. This includes 125 patients undergoing associated aneurysmectomy or valve replacement, or both, and 94 patients 70 years of age or older. Only 360 of these individuals underwent single graft placements. Equally low rates are shared by many groups in unpublicized centers throughout the United States.

What is the legitimacy of surgery for ischemic heart disease? This current vexing problem cannot be answered unless we define subsets of symptomatic ischemic heart disease. Some of the more tangible variables which can help define such subsets include observations on the quality and amount of compromised myocardium, the type and degree of compromise, the quality of distal vessels, underlying metabolic problems, rapidity of disease progression, and the number of manageable clinical risk factors. Progress of our understanding is slow because of our nonstandardized observations and descriptions. Undifferentiated, such observations minimize the tremendous variations and specific problems with which the surgeon must deal. Angry but unrewarding debate on the subject of surgical vs medical management of ischemic heart disease will continue until we make efforts to separate “the apples from the oranges.”

In his fascinating book, Future Shock, Alvin Toffler analyzes human reactions to changes in environmental stimuli and reminds us that our future security lies not in preventing, but rather in controlling, changes in our lives. This philosophy is desperately needed in our rapidly changing approach to patients with known or suspected ischemic heart disease. Just as it is true of other aspects of our environment which Toffler explores, this “future shock” has been created by advances in technology, specifically, coronary angiography and cardiopulmonary bypass. Some are engaged in efforts to deny, rather than to control, changes in our approach to ischemic heart disease. Such biases would leave us the intellectually stultified victims of a strange environment which we are helping to create.

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The Decline of Wonder

Previous editorials in this journal have remarked upon the erosion of clarity and precision in medical writing, and surely this decline is to be lamented. But, for myself, I mourn the passing of a thing called wonder. It has gone from our literature, and with it has gone something rare and sacred from our research experience.

Medical research is an adventure, a vocation aptly described by Freud when he remarked:

... I am not really a man of science, not an observer, not an experimenter, not a thinker. I am nothing but by temperament a conquistador—an adventurer, if you want to translate the word—with the curiosity, the boldness and the tenacity that belongs to that type of being.1

Those of us who daily explore the movement of molecules, the coalitions among enzymes, the lives of cells—we are adventurers, traffickers in miracles, and yet we write in insipid phrases, empty of wonder. Our inquiries probe the secrets of nature: how does it come to pass that out of a clandestine meeting of two cells, out of a hasty dialogue among a few pieces of nucleic acid, a man is born? How does the B lymphocyte learn to elaborate antibodies of exquisite sensitivity? Whence came the chemical genius of the pneumocyte in fashioning a surface-active agent to defy the forces of alveolar collapse? The medical journals are replete with these miracles, and yet in those pages a peculiar alchemy transmutes the miraculous into the mundane, the beautiful into the banal.

By what process has the adventure of research been translated into dry, lifeless prose? By whose decree have we been forbidden to betray the excitement of medicine? Is it that we live in an age when awe and enthusiasm are regarded as faintly indecorous? Or do medical scientists simply lack the fundamental skills in communication by which we might convey our wonder.

Our predecessors in science knew the experience of wonder and left it for us as a legacy in their writings. Thus, Copernicus, summarizing the heliocentric theory in his 1543 manuscript, Revolutions, wrote:

In the midst of all, the sun repose, unmoving. Who, indeed, in this most beautiful temple would place the light-giver in any other part than that whence it can illumine all other parts? ... In this orderly arrangement there appears a wonderful symmetry in the universe and a precise relation between the motions and sizes of the orbs which is impossible to obtain in any other way.2

So, too, in Newton’s Opticks we find the comment:

What is there in places almost empty of Matter, and whence is it that the Sun and Planets gravitate towards one