EDITORIALS

Partial Anomalous Pulmonary Venous Drainage and Mitral Stenosis
A Possible Explanation for Some Interesting Hemodynamic Findings

Two different, but distinct, hemodynamic patterns have been documented when a partial anomalous pulmonary venous return is associated with congenital or acquired mitral stenosis. In one, pulmonary arterial wedge pressure from the abnormally draining lung reflects right atrial pressure. In the other, it approximates the elevated left atrial pressure. In every instance where wedge pressure reflected right atrial pressure, the abnormal drainage was from the right lung through one or more normal pulmonary veins (normal in size and length) directly to the right atrium or superior vena cava. In the two cases previously reported in the literature, and in the report by LeGalley et al appearing in this issue (see page 400), abnormal drainage was from the left lung via left pulmonary veins joining a vertical vein which, in turn, joined the left innominate vein. Left pulmonary arterial wedge pressures approximated those from the right lung reflecting left atrial pressure. Furthermore in the patient of LeGalley et al, when graded exercise was carried out, there was a significant and parallel rise in resistance across the left lung. The resistance of the left lung remained twice that of the right lung throughout. Resistance in all three patients was calculated using the gradient between mean pulmonary arterial pressure and wedge for the right lung and mean pulmonary arterial pressure and right atrial mean for the anomalously draining left lung.

LeGalley and associates add one additional item of hemodynamic information heretofore not available. They measured a gradient of 10 mm Hg on pullback from the left pulmonary veins to the superior vena cava. This, we believe, is the key to the difference in the two hemodynamic patterns. When there is anomalous drainage from the right lung, it is via veins normal in size and length into the right atrium or superior vena cava. When the left lung is involved, drainage is via a single vein which follows a significantly longer course before entering the right atrium. This vessel offers a significant resistance to blood flow. With the increase in cardiac output that occurs with exercise, the drop in pressure across the vessel should also increase. Unfortunately, LeGalley et al did not measure the drop in pressure along the length of this drainage conduit of the left lung during exercise.

In the case reported by LeGalley et al, if the drop of 10 mm Hg from the left pulmonary vein to the superior vena cava is added to the right atrial pressure, the result is very close to the mean right pulmonary wedge pressure of 19 mm Hg. Thus, the intrapulmonary resistance at rest was equal on the two sides. It seems reasonable to us that intrapulmonary resistance should remain equal with exercise; however, this is a point which needs to be determined. To prove our hypothesis, it will be necessary to measure the drop in pressure from the left pulmonary veins to the right atrium both at rest and with exercise. Data about length and diameter of the venous conduit should also be obtained at rest and with exercise. We hope the next team that has the opportunity to study such a patient will make such determinations and publish their results.

J. Frank Dammann, Jr., M.D.*
and Martha A. Carpenter, M.D.*
Charlottesville, Va

*Department of Pediatrics, University of Virginia.

Critical Evaluation of Cardiac Rehabilitation

The scientific meeting on the “Critical Evaluation of Cardiac Rehabilitation,” sponsored by the Council on Rehabilitation of the International Society of Cardiology, which was held in Tel Aviv, Israel, in November and December 1975, emphasized several salient features of importance to the clinician.

There was general agreement that early mobilization of the patient after an uncomplicated myocardial infarction is feasible and safe and that there is
no evidence of increased complications of acute myocardial infarction associated with programs for early ambulation of these appropriately selected patients. The low-level in-hospital programs of physical activity were identified as having limited, but important, goals. They are designed to decrease the deleterious or "deconditioning" effects associated with prolonged immobilization during bed rest, and they decrease both the anxiety and depression which commonly occur in the patient with acute myocardial infarction. Furthermore, there are favorable economic implications of programs for early mobilization of such patients, including a decrease in the duration, and therefore the cost, of the stay in the hospital and an earlier return to work. Possible additional benefits involve the earlier detection of complications (ie, dysrhythmias, effort angina, early myocardial dysfunction) during supervised early ambulation, allowing appropriate therapy to be instituted.

Regarding the role of exercise in the secondary prevention of coronary disease (ie, prevention of recurrent myocardial infarction and sudden cardiac death in the postinfarction patient or the patient with other clinical evidence of coronary disease), current data warrant the prescription of physical activity not for its effect on arresting or retarding the coronary atherosclerotic process (because this area demands a research approach to generate the needed information), but for its indirect beneficial effects. These effects include an increase in physical fitness; an enhancement of the capacity for physical work and of cardiocirculatory performance; often an associated decrease in other coronary risk factors; beneficial psychologic effects, such as increased emotional stability and self-confidence and decreased fear and frustration; and at times an improved socioeconomic status.

Does physical activity (exercise) alter the collateral circulation? There are no data at present which relate the development of an angiographically demonstrable coronary collateral circulation to any factor other than progression of the native obstructive coronary disease. The cardiovascular effects of physical training (ie, the improvement in cardiac function) are primarily not due to an increased collateral circulation but are related to the muting of the heart rate and blood pressure response to any given workload. This reduces the demand on the heart for oxygen and enables the patient to perform more physical activity before reaching the critical rate-pressure product at which the symptoms of angina pectoris or the ST-T electrocardiographic changes of myocardial ischemia or both appear. Other peripheral effects, particularly increased extraction of oxygen, also appear to be important.

The goal of the rehabilitative approach to the postmyocardial infarctional patient is his rapid return to a normal, or near-normal, life style. The important components of the programs for postmyocardial infarctional rehabilitation include training for physical activity, education of the patient and family, and psychosocial and vocational counseling. The initiation and coordination of these rehabilitative efforts are the responsibility of the patient's primary physician, although he may utilize the services of a variety of health-care personnel to implement the actual rehabilitative processes. The ideal program of rehabilitation is incorporated into the plan of care during the initial hospitalization, involves the patient's family and social environment as a support system, and continues in the office of the private physician or in community facilities or both.

Nanette K. Wenger, M.D.*
Atlanta

*Member of the Council on Rehabilitation of the International Society of Cardiology; Professor of Medicine (Cardiology), Emory University School of Medicine; and Director, Cardiac Clinics, Grady Memorial Hospital.

Aortocoronary Bypass Surgery
Emerging Triumph of Controlled Clinical Trials

I would like to see the day when somebody would be appointed surgeon somewhere who had no hands, for the operative part is the least part of the work.

Harvey Cushing

Once again we are backing into the future. Years after the headlong plunge into a burgeoning coronary bypass industry, wholesale application of the procedure finally is being channelled by appropriate studies of what it accomplishes and for whom. The determined campaign for objective assessment is being met by well-designed controlled clinical trials. Thus, naked numerators generated by uncontrolled studies are finally getting acceptable denominators, notably in the results of Barry et al., of Takaro et al., and of Mathur and Guinn, whose work has been summarized elsewhere. That the "surgical mystique" need no longer permit lower standards of acceptability for operations than for pills is evident in the increasing realization of the moral and ethical indispensability of controlled clinical trials of all treatments, surgical as well as medical. Indeed, even some who persist in presenting results from uncontrolled series have made