severity of coronary disease was judged approximately equal in all groups, although the patients classified as good risks for vein grafts had slightly more extensive coronary disease than the patients in the pedicle series. The poor risks for vein grafts had far more extensive coronary disease than the other groups, and would have been considered inoperable during the period when pedicle surgery was performed. The poor-risk vein-graft group was not treated further as part of a survival study because of an operative mortality of 56 per cent (compared with only 1.8 per cent for the good-risk vein-graft group and 4.6 to 8.7 per cent for the pedicle groups). The survival rate in patients with coronary-artery disease of similar severity was lowest in the group treated medically, and improved progressively in the surgically-treated groups in the following order: single pedicle, multiple pedicle, and vein grafts. The best-surviving surgically-treated group, the vein-graft series, has been followed for only two years. (*Sewell, W. H.: Life Table Analysis of the Results of Coronary Surgery, Chest 61: 481, 1972.*)

SURGICAL STRESS Tachycardia occurred in 18 surgical team members monitored during 33 operations. Etiologic factors included degree of responsibility for the patient (operating surgeon *vs.* assistant), fatigue, operative difficulty, anesthesia (cardiac arrest), and previous surgical mishap. Interestingly, tachycardia occasioned by operative difficulty was promptly reduced when a staff consultant "scrubbed in," but was temporarily increased when the instructor merely gave advice as an onlooker. (*Goldman, L. I., McDonough, M. T., and Rosemond, G. T.: Stress Affecting Surgical Performance and Learning. I. Correlation of Heart Rate, Electrocardiogram, and Operation Simultaneously Recorded on Video Tapes, J. Surg. Res. 12: 83–86, 1972.*)

HEMODYNAMIC AND RADIOLOGIC PATTERNS IN CHF Pulmonary hemodynamic and radiologic changes secondary to acute left ventricular failure (CHF) were studied in 30 patients with acute myocardial infarction in a critical care unit. Pulmonary capillary wedge pressures (PCWP) and pulmonary arterial oxygen saturations were obtained serially and were correlated with 65 portable chest x-rays obtained with the patient in the semi-sitting position. In 80 per cent of patients studied, PCWP's above 18 mm Hg were associated with radiologic evidence of moderate-to-severe congestive heart failure. In 10 per cent of patients discrepancies between PCWP's and chest x-rays were associated with: 1) early signs of failure, manifested by high PCWP but followed by radiologic evidence of failure a day later; 2) low PCWP in response to diuretic treatment, but 1.5–21-hour delay in resolution of the radiologic changes; 3) low PCWP with loss of vascular integrity on chest x-ray, accompanied by severe hypoxemia. The last appeared in patients with cardiogenic shock. Ten of 14 patients with pulmonary arterial oxygen saturations less than 60 per cent had moderate or severe failure evident on their chest x-rays; four patients with mild changes were in cardiogenic shock.

The radiologic criteria appeared in a predictable sequence commensurate with congestive heart failure. Early findings included increased upper-zone blood flow, hilar haze followed progressively by increased markings of peripheral blood vessels, and periacinar rosette formation. The presence of cardiomegaly, pleural effusion, Kerley B lines, and increased size of the pulmonary artery proved unreliable as clues to CHF. (*McHugh, T. J., and others: Pulmonary Vascular Congestion in Acute Myocardial Infarction: Hemodynamic and Radiologic Correlations, Ann. Intern. Med. 76: 29–33, 1972.*)

BLOOD GASES AND MYOCARDIAL INFARCTION Measurements of hemodynamic changes and calculations of right-to-left intrapulmonary shunts were made in a series of patients shortly after their admission to a myocardial infarction research unit. When congestive heart failure (CHF) was not clinically evident, arterial blood gases, calculated right-to-left intrapulmonary shunts, and pulmonary arterial pressures (PAP) were similar to values in patients with angina but no myocardial infarction. When CHF complicated the clinical picture, Pa_{O_2} was lower, while shunt and PAP were increased. It appears that the arterial hypoxemia associated with

myocardial infarction is related to the degree of pulmonary venous hypertension and resulting pulmonary vascular congestion. (*Fillmore, S. J., and others: Blood–Gas Changes and Pulmonary Hemodynamics Following Acute Myocardial Infarction, Circulation 45: 1972.*)

Respiration

ABDOMINAL SURGERY AND PULMONARY COMPLICATIONS A study from a Canadian Veterans' Hospital revealed that although the mortality rate for major abdominal surgery in patients more than 70 years old remained unchanged between 1950 and 1966, the morbidity fell significantly during the period from 1962 to 1966 (postoperative complications occurred in 62 per cent of patients between 1950 and 1959, but in only 46.5 per cent of patients between 1962 and 1966). The decline in the morbidity rate was attributed to a decrease in postoperative wound and intra-abdominal infections. Despite special efforts to diagnose and treat for the presence of pulmonary disease pre- and postoperatively, there was no reduction in the morbidity (28 per cent) or mortality (4.5 per cent) caused by pulmonary complications in the 1962–1966 period. Pulmonary complications were twice as common in patients with preexisting pulmonary disease. Pre-existing cardiovascular or genitourinary disease was not associated with increased complications in those organ systems. (*Robins, R. E., and Budden, M. K.: Major Abdominal Surgery in Patients over 70 Years of Age: Results during 1962 to 1966 Compared with Those during 1950 and 1959, Can. J. Surg. 15: 1–6, 1972.*) ABSTRACTER'S COMMENT: It is of interest that an intensive program of preoperative breathing exercises, early recognition and "mechanical" treatment of postoperative pulmonary complications, and liberal use of sputum cultures as a guide to the choice of postoperative antibiotics decreased the incidence of gram-positive while increasing that of gram-negative pulmonary infections. The change in the bacterial spectrum of pulmonary infections probably contributed to the sustained incidence of respiratory infections and persistence of the morbidity/mortality figures. The next step will necessitate increased vigilance for early and vigorous treatment of gram-negative infections

Metabolism

HYPERALIMENTATION, HYPOPHOSPHATEMIA AND COMA High-caloric intravenous hyperalimentation of three malnourished patients was associated with the appearance of weakness, paresthesias, and decreases in serum inorganic phosphorus to less than 1 mg/100 ml. The symptoms appeared on the fifth day of hyperalimentation, with two patients developing seizures and coma, and with one death following the onset of coma. Although the serum inorganic phosphorus was restored and maintained at normal levels in one patient, it did not prevent recurrence of the neurologic symptoms upon resumption of hyperalimentation.

Neither hyperosmolarity nor ketoacidosis occurred. The etiology of the neurologic symptoms is unclear, and the association with hypophosphatemia may be only temporal. (*Silvis, S. E., and Paragas, P. D.: Parethesias, Weakness, Seizures and Hypophosphatemia in Patients Receiving Hyperalimentation, Gastroenterology 62: 513–520, 1972.*)

Renal Function

REGULATION OF HYDROGEN ION CONCENTRATION Several theories regarding hydrogen-ion secretion are examined in this excellent review. The authors, using a new method for studying tubular secretion of hydrogen ion, present evidence that hydrogen-ion secretion is best explained by a "pump-leak system." Hydrogen ion is actively pumped from tubular cell to lumen; this mechanism appears to be gradient-limited and opposed by passive back-flux. The latter is sensitive to changes in intratubular buffer concentration and *p*H. Results of these studies indicate that our current concepts of hydrogen-ion secretory capacity of the tubule, the relationship between Na^+ reabsorption and H^+ secretion, and the source of secreted H^+ will soon be changed. (*Malnic, G., and Giebisch, G.: Mechanism of Renal Hydrogen Ion Secretion, Kidney International 1: 280–296, 1972.*) ABSTRACTER'S COMMENT: This article is part of a "Symposium on Acid–Base Homeostasis." Articles included cover a variety of clinical problems associated with disturbances in acid–base balance. Reading of the entire series is recommended for an up-to-date evaluation of the state of our knowledge in this important field.