

## *Anesthesiology and Intensive Care*

THE ARRAY of physicians claiming expertise in intensive care is staggering. Many anesthesiologists believe they are experts in acute medicine because of their ability to establish a secure airway, support pulmonary function and care for the unconscious patient and because of their familiarity with ventilating and monitoring devices. Specialists in pulmonary medicine believe they have expertise in acute medicine because they continually deal with diseases of the respiratory tract. Cardiothoracic surgeons feel that their ability to encroach on the anatomic sanctity of the thoracic cage and to handle its contents gives them special expertise in intensive care. Cardiologists believe that intensive care is their domain. Most physicians and surgeons admitting patients to intensive care units (ICU) also believe that they can handle almost all aspects of patient care pertaining to their anatomic or functional specializations. After many years as the clinical and administrative director of a multidisciplinary intensive care unit I strongly believe that none of the above-mentioned individuals is truly a specialist in the total management of critically ill patients.

A specialist in critical care medicine, perhaps better called an "intensivist," must be expert in many areas in such a manner as to transcend the traditional divisions inherent in today's practice of medicine. The intensivist must combine the collective expertise of the anesthesiologist, the pulmonary medicine specialist, the cardiologist, the nephrologist, and the clinical pharmacologist. He or she must possess clear understanding of fluid and electrolyte balance, of the effects of severe trauma and major operative procedures on the functions of various organs, and of the proper use of parenteral feedings and antibiotics. The intensivist must be expert in applied physiology, especially as it pertains to the cardiovascular, pulmonary, and renal systems. He or she must have superior knowledge of mechanical ventilators and electronic devices. This extensive expertise is available now to only a few physicians (from different disciplines) who have introduced this concept

to the practice of acute medicine. An intensivist who spends a great share of his time managing critically ill people acquires unique and invaluable experience in the total management of critically ill patients.

The choice of the clinical and administrative director "intensivist," as outlined above, has little to do with his background and is certainly not predicated on a specific discipline such as anesthesiology. The specialty of anesthesiology, like all other disciplines of medicine, should not be unwilling to contribute a fair share of such individuals. Such contribution will not constitute a major depletion of manpower in anesthesiology. Dabbling in intensive care by multitudes of anesthesiologists who may or may not be experts in acute medicine, however, constitutes a drain on the resources of anesthesiology and a disservice to the concept of intensive care.

Staffing of the ICU at the resident level represents an important and difficult issue. No one department or service (and certainly not an anesthesiology department) could, or should be expected to, provide all the residents needed to man an ICU and provide well-thought-out medical coverage at all times. On the other hand, several departments or services sharing one multidisciplinary ICU can each afford to assign one or two residents, for periods of one month to one year, to provide adequate coverage in the ICU without undue hardship. The uniformity of patient care and proper training of these residents would then be the function of the intensivist director of the unit. A general intensive care unit, a coronary care unit, and neonatal and premature unit represent the most rational physical subdivisions of critical care areas commensurate with efficient staffing, best patient care, and maximum economy. Fragmentation of intensive care areas into general surgical ICU, cardiac surgical ICU, medical ICU, respiratory care unit, etc., indicates lack of understanding of the problems encountered in acute medicine. Most of these fragmented units function merely as glorified nursing care areas. They are neither an ideal

place for teaching residents nor an optimal place for treating critically ill patients. Furthermore, they result in costly duplication of expensive equipment.

Given a multidisciplinary unit with an intensivist director, anesthesiology residents (as well as residents from other services) can gain valuable experience from one-month rota-

tion or a one-year elective assignment to such units.

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### Drugs and Their Actions

#### CBF AND MYOCARDIAL O<sub>2</sub> CONSUMPTION

Coronary blood flow (CBF) and left ventricular myocardial oxygen consumption ( $\dot{M}\dot{V}_{O_2}$ ) were investigated before and after intravenous injection of 1) droperidol, 2) droperidol followed by fentanyl, and 3) ketamine. The measurements were performed on 17 patients undergoing heart surgery and compared with values in ten subjects found by previous cardiac catheterization to be free of cardiovascular disease. Heart rate, arterial blood pressure and cardiac index were evaluated in all 27 individuals. Administration of droperidol (0.33 mg/kg) led to a significant increase in heart rate associated with a slight drop of arterial blood pressure secondary to a reduction of peripheral resistance. CBF and  $\dot{M}\dot{V}_{O_2}$  increased by 49 per cent and 38 per cent, respectively. The subsequent injection of fentanyl (0.0067 mg/kg) antagonized nearly all hemodynamic changes induced by droperidol: CBF and  $\dot{M}\dot{V}_{O_2}$  returned to control levels. The combination of droperidol and fentanyl appears to be an ideal anesthetic technique, even for patients with impaired cardiovascular function. Ketamine (5 mg/kg) was followed in four of nine patients

by two- to three fold increases in CBF and  $\dot{M}\dot{V}_{O_2}$ , probably secondary to increases in arterial blood pressure and heart rate. Insignificant changes were observed in the other five. Because of its unpredictable effect on  $\dot{M}\dot{V}_{O_2}$ , ketamine appears contraindicated for patients with fixed hypertension, decreased coronary reserve, or mitral-valve disease. (Somitag, H., and others: *Coronary Blood Flow and Myocardial Oxygen Consumption in Patients during Induction of Anesthesia with Droperidol/Fentanyl or Ketamine*. *Z. Kreislaufforsch* 61: 1092, 1972.) EDITOR'S COMMENT: We are beginning to witness the growth of a body of evidence to suggest that the "myocardial depression" we have all grown to fear may indeed be of crucial importance for the well-being of the patient with coronary-artery disease and myocardial ischemia. It is interesting to think that the wealth of pharmacologic and physiologic data amassed in the otherwise healthy experimental animal and man may require revision when applied to the patient with compromised myocardial performance. The once-desirable autonomic stimulation provided by anesthetic drugs may turn out to be potentially lethal.