

Literature Briefs

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Briefs were submitted by Drs. Vagn Askrog (Denmark), C. M. Ballinger, M. T. Clarke, H. S. Davis, Deryck Duncalf, G. Hohmann (Germany), Martin Helrich, J. J. Jacoby, H. Landesman, W. H. Mannheimer, R. E. Ponath, Alan D. Randall, H. S. Roe, Norman Rosenbaum, P. H. Sechzer and W. Stocker. Briefs appearing elsewhere in this issue are a part of this column.

NOREPINEPHRINE Constriction of the ascending aorta in the guinea pig resulted in ventricular hypertrophy and congestive heart failure. In animals with heart failure which were killed 5 to 40 days after constriction, the norepinephrine stores in both ventricles were strikingly reduced; the extent of reduction was related to the severity of the constriction. (Spann, J. F., Jr., Chidsey, C. A., and Braunwald, E.: *Reduction of Cardiac Stores of Norepinephrine in Experimental Heart Failure, Science* 145: 1439, 1964.)

SYNAPTIC INHIBITION An impulse causes some of the synaptic vesicles which are in close contact with the synaptic membrane to eject their contained transmitter substance into the synaptic cleft. Some of the transmitter becomes momentarily attached to the specific receptor sites on the postsynaptic membrane, with the consequence that fine channels open across this membrane. The subsynaptic membrane momentarily assumes a sieve-like character. Chloride and potassium ions move across the membrane thousands of times more readily than normally, and this intense ionic flux gives the current that produces the inhibitory postsynaptic potential and that counteracts the depolarizing action of excitatory synapses, so effecting inhibition. (Eccles, J. C.: *Ionic Mechanism of Postsynaptic Inhibition, Science* 145: 1140, 1964.)

DIMENHYDRINATE Dimenhydrinate was administered intravenously to patients in

spontaneous labor in order to evaluate its effect on the length of labor, its analgesic property, its potentiation of the effects of standard analgesics and its overall safety. No evidence was provided that labor was shortened or that uterine activity was increased in those receiving intravenous dimenhydrinate, nor did this drug decrease the need for conventional analgesics. There were no maternal or fetal complications. Intravenous administration of dimenhydrinate has no advantage over analgesics administered by other routes and has a limited use in current obstetrical practice. (Harkins, J. L., and others: *A Clinical Evaluation of Intravenous Dimenhydrinate in Labour, Canad. Med. Ass. J.* 91: 164 (July 25) 1964.)

NEOSTIGMINE TOXICITY Following thymectomy for myasthenia gravis, neostigmine toxicity has been found to be a cause of respiratory failure. A curious state of intolerance to certain effects of the cholinergic agent often develops in the early postoperative period, characterized by restlessness, apprehension, perspiration, tachycardia, dyspnea, excessive respiratory tract secretions, weakness, and hypotension. Repeated observations have shown that the progression of untoward effects can be halted by reduction or omission of neostigmine, provided respiratory failure has not developed. However, reduction of drug dosage to nontoxic levels may result in such generalized muscular weakness that respiratory efforts are inadequate to support ventilation. Even though a larger drug dose will improve muscle strength, it will also evoke copious secretions and bronchospasm. When this occurs, tracheostomy and ventilatory assistance are mandatory and unavoidable. Sensitivity to cholinergic drugs usually persists for 3 to 5 days after operation, occasionally longer. Thereafter, drug dosage can be again increased with relative impunity as the need to improve muscle strength indi-

cases. (Head, J. M.: *Respiratory Failure after Thyrectomy for Myasthenia Gravis*, *Ann. Surg.* 160: 123 (July) 1964.)

ULTRAVIOLET IRRADIATION The influence of ultraviolet irradiation of the operating room on the incidence of postoperative wound infections was investigated by means of a double-blind, randomized study in five institutions. Over a two year period, 14,854 operations and 15,613 incisions were studied in relation to postoperative wound infection. Although ultraviolet irradiation reduced the number of airborne bacteria in the operating room, the wound infection rate in the entire series following operation was 7.4 per cent in the irradiated rooms and 7.5 per cent in the unirradiated rooms. The only category of wounds that benefitted significantly from the use of ultraviolet radiation was the refined-clean group, in which the postoperative infection rate was reduced from 3.8 to 2.9 per cent. Even this beneficial effect, which was confined to a category representing only 19.2 per cent of all infections analyzed, was lost in the overall experience, offset by an apparent detrimental effect of irradiation on unclean wounds. (*Postoperative Wound Infections: The Influence of Ultraviolet Irradiation of the Operating Room and of Various Other Factors. Report of an Ad Hoc Committee of the Committee on Trauma, Division of Medical Sciences, National Academy of Sciences-National Research Council*, *Ann. Surg.* 160: Supplement (Aug.) 1964.)

COLD BLOOD BANK To avoid the effects of cardiac and general hypothermia during massive hemorrhage, cold blood bank should be warmed to body temperature when administered rapidly and in large amounts. The incidence of cardiac arrest during massive blood replacement (3,000 ml. or more per hour) was reduced from 58.3 per cent to 6.8 per cent by warming the cold blood from the bank to body temperature while being transfused. (Boyan, C. P.: *Cold or Warmed Blood for Massive Transfusions*, *Ann. Surg.* 160: 282 (Aug.) 1964.)

VENTILATORS Ventilators are of value under three main circumstances: (1) inadequate ventilation, (2) intractable left heart

failure, and (3) cerebral edema. Each of these situations requires different ventilator characteristics. The performance of the Blease P3, Engström, Morch Piston, Bird Mark 7 and 8 and Bennett PR1 and PR2 respirators were evaluated in these specific clinical situations. Patients with normal lungs were ventilated satisfactorily by any of the equipment mentioned. Those with chronic pulmonary disease were best managed with patient-triggered, flow-adjustable machines, the preference being for the Bird Mark 7 or Bennett PR2. Those requiring hyperventilation, particularly against increased resistance, were best managed by any of the volume-cycled group. The Bennett equipment did not function satisfactorily under these circumstances; and although the Bird ventilators are capable of required high pressures, they still produced volume-variable respiration and were not as efficient as the volume-cycled group. Pulmonary edema was satisfactorily reversed with either the Bird or Engström machines, using high mean inflation pressures and the expiratory retard. The Bird had the advantage of patient-triggering and easy alcohol nebulization. Low mean intrathoracic pressures were easily achieved by using Bird Mark 8, Bennett PR2 or Engström machines. The first two were preferred for the management of cerebral edema, as patient-triggering prevented an inflation occurring out of phase and causing a sudden rise in intrathoracic and intracranial pressures. (Fairley, H. B., and Hunter, D. D.: *Performance of Respirators Used in the Treatment of Respiratory Insufficiency*, *Canad. Med. Ass. J.* 90: 1397 (June 20) 1964.)

AIR-MIX CONTROLS Certain ventilators in common use for prolonged intermittent positive pressure respiration incorporate an injector system for air entrainment. It is generally believed that these machines deliver 40 per cent oxygen in the inspired air, when this gas is used as the motive force. To determine the actual percentage being delivered, mean inspired oxygen levels, delivered by the Bennett PR1 and Bird Mark 7 ventilators, were measured at various cycling pressures. Using the Bird ventilator, oxygen levels varied from 51.5 to 96.8 per cent, being highest at low flows and at high cycling pressures. The Bennett PR1 delivers more constant percentages of