BRIEFS FROM THE LITERATURE

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CARBON DIOXIDE The changes in blood *p*H and pCO_2 during the recovery phase were studied in a group of children and adults with diabetic acidosis, diarrheal acidosis, and uremic acidosis. Patients recovering from these types of acidosis frequently pass through a phase in which the blood *p*H is normal but pCO_2 is still decreased. This suggests that there is a sustained hyperventilation even though the patient is no longer acidotic. It is also suggested that such patients may have an increased sensitivity of the respiratory center to pCO_2 and/or hydrogen ion concentration accounting for the continuing hyperventilation. (*Winters, R. W., Lowder, J. A., and Ordway, N. K.: Observations on Carbon Dioxide Tension During Recovery from Metabolic Acidosis, J. Clin. Invest. 37: 640 (May) 1958.*)

PULMONARY EMBOLISM Physiologic phenomena associated with pulmonary embolism in the dog, such as pulmonary hypertension, peripheral hypotension, hyperpnoea and bradycardia, appear to be reflex in nature. This reflex is initiated only in vessels less than 25–100 micra in diameter and is mediated through the sympathetic nervous system. The hyperpnoea noted following pulmonary embolism is most likely mediated through the vagus nerve. In cases of massive pulmonary embolism, a mechanical factor is introduced due to the widespread blockage of the pulmonary vascular tree. (*Weidner, M. G., and Light, R. A.: Role of Autonomic Nervous System in Control of Pulmonary Vascular Bed, Ann. Surg. 147: 895 (June) 1958.*)

PULMONARY FUNCTION Vital capacity, residual volume, maximum breathing capacity, arterial blood gases and *p*H, and ventilation during exercise studies were made on a group of 63 paraplegic patients and a group of 17 normals. These were divided into three groups: (1) those with lumbar spinal lesions who had paralysis of the lower limbs and the pelvic floor but no paralysis of the muscles of breathing; (2) those with thoracic spinal lesions with paralysis of the lumbar muscles and lower intercostals; and (3) those with lower cervical spinal lesions with paralysis of all muscles of breathing except the diaphragm and the accessory muscles of respiration. It was found that the vital capacity and maximum breathing capacity of patients with lumbar lesions were normal. The group with lower cervical lesions had a vital capacity approximately two-thirds of normal and a maximum breathing capacity of one-half of normal. The paraplegics with thoracic lesions had vital capacities and maximum breathing capacities between the values for the cervical and lumbar lesions groups. The resting expiratory reserve volume was below the normal percentage only for the group of paraplegics with cervical lesions. For this group the percentage value was one-half normal which was higher than was anticipated for patients with only inspiratory muscle function. Residual volumes of all groups were significantly higher than in the normal. Arterial blood gases of all groups were within normal limits and the ventilatory response to exercise for all groups of paraplegics did not differ from normal. (*Hemingway, A., Bors, E., and Hobby, R. P.: Investigation of Pulmonary Function of Paraplegics, J. Clin. Invest. 37: 773 (May) 1958.*)

DIFFUSING CAPACITY Data from 151 patients have been analyzed to determine the validity of the end tidal sampling method of measuring the mean alveolar carbon monoxide concentration in lung

disease. A comparison of results obtained with the end tidal sampling technique in patients with asthma and emphysema indicates that the use of carbon monoxide in these two conditions enables an estimate to be made of the relative normality of the lung parenchyma. (*Bates, D. V.: Measurement of Pulmonary Diffusing Capacity in Presence of Lung Disease, J. Clin. Invest. 37: 591 (April) 1958.*)

RESPIRATOR The Pesty positive-negative pressure respirator with variable pause has been used successfully in a variety of conditions associated with prolonged respiratory inadequacy. Mixtures of anesthetic gases can be administered in place of oxygen or compressed air. The versatility of the apparatus is such as to permit control of minute ventilation, tidal volume, insufflation speed, expiratory pause, ventilation rate and positive and negative pressure values. Should the patient begin to initiate his own respiration, the automatic cycling stops and frequency and depth are instantly adjusted so as to allow him to breathe spontaneously without interference (one of the characteristics of an "ideal respirator"). (*Trémolières, J.: New Apparatus for Artificial Respiration, J. A. M. A. 167: 1086 (June 28) 1958.*)

IPPB Atelectasis remains the most common postoperative complication. The usual prophylactic measures (e.g., coughing, standing in the immediate postoperative period) may be feasible in some patients. It is particularly in these as well as in patients with previous bronchopulmonary disease that IPPB is of greatest benefit. The preferred method is: (1) gas mixture of 60 per cent helium and 40 per cent oxygen, (2) three to four treatments for 15 minutes each for five days, (3) positive pressure with 15 to 20 cm. water for adults and 10 to 12 cm. water for children, (4) 8–10 respirations per minute, and (5) aerosol therapy with 6 to 8 drops of a bronchodilator in 15 drops of water. (*Rudy, N. E., and Crepeau, J.: Role in Intermittent Positive Pressure Breathing Postoperatively, J. A. M. A. 167: 1093 (June 28) 1958.*)

VENTILATORY FAILURE The diagnosis of ventilatory failure is difficult from signs and symptoms alone. The rapid infrared CO_2 analyzer using the "rebreathing method" offers a simple, reliable test for ventilatory failure which can be performed by a technician in less than 10 minutes. It can be performed on all types of patients, awake or unconscious. Carbon dioxide narcosis can be readily diagnosed and mechanical measures to increase ventilation quickly instituted. (*Griggs, D. E., and others: Rapid Diagnosis of Ventilatory Failure with Carbon Dioxide Analyzer, Am. J. Med. 25: 31 (July) 1958.*)

ASPHYXIA Ninety-eight experiments were carried out on puppies to study the effect and mechanism of action of intra-arterial infusions of blood and of hypertonic calcium chloride and glucose solutions in asphyxiation. Intra-arterial infusions of blood and of hypertonic calcium chloride and glucose solutions are effective methods for the treatment of severe asphyxiation; the effect is attained reflexly via stimulation of the receptor apparatus of the arteries. (*Persianinov, L. S.: Role of Vascular Interoception in Restoration of Vital Functions in Asphyxiation, Fiziol. Zh. 42: 685 1956.*)

POSTOPERATIVE HYPOVENTILATION A majority of patients in whom arterial oxygen, pCO_2 and pH determinations were made during the postoperative period, showed evidence of inadequate ventilation. Metabolic acidosis perhaps secondary to the respiratory acidosis persisted into the first postoperative day. Ventilation was improved by proper dosage of analgesic drugs correctly timed to relieve pain and splinting. (*Mastio, G. J., and Allbritten, F. F.: Respiratory Function in Postoperative Patient, A. M. A. Arch. Surg. 76: 732 (May) 1958.*)

POSTOPERATIVE HYPOXIA Studies on 62 postoperative pulmonary resection patients revealed that arterial blood oxygen saturation was lowest on the second and third days after pulmonary resection with a gradual return to normal by the seventh or eighth day. There was no correlation between oxygen saturation and the pulse rate. (*Siebecker, K. L., and others; Postoperative Ear Oximeter Studies on Patients Who Have Undergone Pulmonary Resec-*