

(Bergofsky, E. H.: *Mechanism for Respiratory Insufficiency After Cervical Cord Injury*, *Ann. Intern. Med.* 61: 435 (Mar.) 1964.)

EXPERIMENTAL LUNG COLLAPSE

Rate, volume, and time of lung collapse following tracheal occlusion in rats breathing 100 per cent oxygen at varying ambient pressures was studied. Rate of lung collapse was proportional to oxygen uptake and increased as barometric pressure decreased. Alveolar carbon dioxide tension and water vapor tension were also determinants of rate of lung collapse. Determination of collapse time is predictable in any species for any given lung volume and rate of oxygen uptake. (Robertson, W. G., and Farhi, L. C.: *Rate of Lung Collapse After Airway Occlusion on 100 Per Cent O₂ at Various Ambient Pressures*, *J. Appl. Physiol.* 20: 228 (Mar.) 1965.)

MOTOR CONTROL OF LUNG

Stimulation of the efferent cervical vagus nerve in cats and dogs increased airway resistance. Response increased with increasing frequency and became maximal at 12/second. Dead space decreased during vagal stimulation. The largest response to stimulation was in the homolateral lung. Rapid freezing of lung tissue and microscopic examination revealed that the primary site of bronchoconstriction was in the lobar bronchi. Smaller bronchi were less uniformly involved and respiratory bronchioles and alveolar ducts were not constricted. (Olsen, C. R., and others: *Motor Control of Pulmonary Airways Studied by Nerve Stimulation*, *J. Appl. Physiol.* 20: 202 (Mar.) 1965.)

POSTOPERATIVE RESPIRATION

Studies of respiratory volumes and mechanics have been made in 22 patients undergoing thoracic surgery and 11 patients undergoing abdominal surgery preoperatively and postoperatively at 1 to 3 hours, 4 to 6 hours, 1 day, and 1 week. In the patients who had had thoracotomy, tidal volume, lung compliance, work per breath, arterial pH, and standard bicarbonate were all significantly decreased in the postoperative period. Breathing rate was increased to maintain the preoperative minute volume. The reduced compliance means that increased effort was required to move air in

and out of the lungs no matter what its cause. The changes were maximal immediately after the operation, and at the end of a week had not yet completely returned to normal. (Lewis, J. L., and Welch, J. A.: *Respiratory Mechanics in Postoperative Patients*, *Surg. Gynec. Obstet.* 120: 305 (Feb.) 1965.)

ASPIRATION PNEUMONITIS

Effect of aspiration was studied in dogs using different solutions of various pH and quantity. Sequelae of aspiration pneumonitis were found to be directly proportional to the acidity and volume of the aspirated solution. Low pH and large volumes produced more severe reactions. A syndrome of sudden apnea and hypotension immediately following aspiration was noted in all animals except those in which saline solution was used. This could be abolished with bilateral vagotomy, but not with atropine. Attempted neutralization of low pH aspirants did not alter the usual reaction. (Exarhos, N. D., and others: *Importance of pH in Volume and Tracheal Bronchial Aspiration*, *Dis. Chest* 47: 167 (Feb.) 1965.)

RESPIRATORS

Serial determinations of cardiac output, blood gases, and electrolyte values have revealed three basic patterns of circulatory response in 42 patients whose respiratory tidal gas exchange was assumed by a volume displacement respirator for periods up to 12 days. Mechanical ventilation can improve an abnormal metabolic status due to cardiac or pulmonary dysfunction by increasing blood gas exchange. When a normal cardiovascular system is present and capable of responding, cardiac output rises to a value sufficient to satisfy the total body requirements for circulation. By decreasing the perfusion requirements of the respiratory muscles, the total demand for circulation is reduced and perfusion to other parts of the body is improved in patients incapable of elevating cardiac output. (Clowes, G. H., and others: *Patterns of Circulatory Response to the Use of Respirators*, *Circulation* 31: 1-157 (Apr.) 1965.)

HYPOTHERMIA

Renal hemodynamics were studied during hypothermia of the denervated dog kidney while blood viscosity and