

dynamics are not significantly changed with the diuresis of negative pressure breathing. It is concluded that altered antidiuretic hormone activity is the primary mechanism by which continuous pressure breathing changes the rate of urine flow. (Murdaugh, H. V., Sieker, H. O., and Manfredi, F.: *Effect of Altered Intra-thoracic Pressure on Renal Hemodynamics, Electrolyte Excretion and Water Clearance*, *J. Clin. Invest.* 38: 834 (May) 1959.)

PULMONARY EDEMA Pulmonary vascular congestion was produced in spontaneously breathing anesthetized dogs by partial aortic constriction and intravenous infusion. Brief periods of congestion were associated with small changes in the lung compliance compared with the progressive and striking compliance reduction (minus 78 per cent) noted with prolonged congestion. Findings suggested that surface phenomena were responsible for the mechanical behavior of edematous lungs rather than vascular congestion, *per se*, or intrinsic tissue changes. (Cook, C. D., and others: *Pulmonary Mechanics During Induced Pulmonary Edema in Anesthetized Dogs*, *J. Appl. Physiol.* 14: 177 (March) 1959.)

HYPERVENTILATION Twenty patients with hyperventilation syndrome, in whom organic heart disease had been ruled out, were studied to determine changes in electrocardiogram, blood pH, serum electrolytes, and blood gases during voluntary hyperventilation with room air and again with 6 per cent carbon dioxide. Transient depression of ST segments and T wave inversion were seen most commonly. These were eliminated by infusion of K⁺ ion, and/or inhalation of 6 per cent carbon dioxide. It is suggested that electrocardiographic changes during hyperventilation may be due to combined effects of respiratory alkalosis and increased sympathetic tone secondary to release of epinephrine, which in turn may cause a migration of intracellular potassium and alterations in membrane potentials across myocardial cell membranes. Hypervagotonia produced by respiratory alkalosis may also contribute to electrocardiographic changes. Emphasis is placed on importance of interpretation of electrocardiographic changes and dis-

tinguishing clinically between symptoms due to hyperventilation syndrome and organic heart disease. (Yu, P. N., Yim, B. J. B., and Stanfield, A.: *Hyperventilation Syndrome*, *Arch. Int. Med.* 103: 902 (April) 1959.)

PULMONARY REFLEXES In mongrel dogs the left lung was isolated except for the nerve supply. Increasing the pressure in the isolated left pulmonary veins resulted in pulmonary hypertension and arteriolar constriction in the opposite intact lung. Thus evidence is submitted that elevation in pulmonary venous and capillary pressures produces reflex arteriolar vasospasm in the lungs and this reflex aid in the regulation of the lesser circulation. (Sauger, P. W., and others: *Observations on Pulmonary Vasomotor Reflexes*, *J. Thoracic Surg.* 37: 774 (June) 1959.)

PULMONARY VASCULAR RESISTANCE In 30 patients with atrial septal defects and pulmonary artery pressure over 60 mm. Hg, breathing 100 per cent oxygen reduced the systolic, diastolic and mean pressures in the pulmonary artery. Pulmonary blood flow increased, and total pulmonary resistance fell. The increase in flow and fall in pressure indicate a decline in pulmonary vascular resistance. The mechanism of the fall in pressure and increase in flow with breathing 100 per cent oxygen is not known. Patients with atrial septal defect and in whom breathing of oxygen produced the greater fall in resistance had a higher operative survival rate. (Swan, H. J. C., and others: *Effect of Oxygen on Pulmonary Vascular Resistance in Patients with Pulmonary Hypertension Associated with Atrial Septal Defect*, *Circulation* 20: 66 (July) 1959.)

HYPOXEMIA After one minute of succinylcholine apnea, with gas flow disconnected, arterial oxygen saturation dropped 15 per cent. Apnea with endotracheal suction produced similar results. The effects of apnea and apnea and suction combined were practically nullified by the concomitant insufflation of oxygen at 4 liters per minute. Obviously oxygen insufflation protects not only against apnea, but also against suctioning of the apneic patient. (Boba, A., and others: *Effects of Apnea, Endo-*

tracheal Suction, and Oxygen Insufflation, Alone and in Combination, Upon Arterial Oxygen Saturation in Anesthetized Patients, J. of Lab. & Clin. Med. 53: 680 (May) 1959.)

CARDIAC CATHETERIZATION One hundred years ago, J. B. A. Chauveau, then Professor of Physiology at the School of Veterinary Medicine in Lyon (France), published the result of investigations on heart catheterization in horses. The slow rate of the heart allowed easy graphic recording of the events. Two catheters, made by himself, were introduced through the vessels of the neck, one into the left ventricle by way of the carotid artery, the other one into the right ventricle by way of the jugular vein. Calibrations gave an approximate idea of the values of pressures during the cardiac cycle. Chauveau also gave the interpretation of the sounds of the heart. (Ruckebusch, Y.: *In Connection with Centenary: J. B. A. Chauveau and Intracardiac Hemodynamics, Presse méd.* 67: 1167 (June) 1959.)

EXTRACORPOREAL CIRCULATION A heart-lung machine able to deliver blood 98-100 per cent saturated with oxygen at a rate of 6 liters per minute is described. The oxygenator is made of a siliconized nylon membrane which braces a revolving drum. Oxygen is vaporized within the drum with an aerosol composed of a phosphate buffer solution at a pH of 7.4. The blood circulates over the external surface of the drum. The oxygen dissolved in the buffer solution passes through the micropores of the siliconized membrane into the blood. None of the buffer solution is able to diffuse into the blood. The pump maintains a pulsatile type of flow during the period of extracorporeal circulation. The membrane is disposable. The other parts of the apparatus are sterilized with ethylene oxide. (Thomas, J. A.: *Heart-Lung Machine with Artificial Pulmonary Membrane, Compt. rend. Acad. Sc.* 248: 291 (Jan.) 1959.)

CARDIAC ARREST Two cases of acute cardiac arrest are reported in humans in which there was evidence of irreversible changes of the brain by microscopic examination. The

anoxia resulting from cardiac arrest has a varied effect upon the different parts of the central nervous system. The cortex of the brain and cerebellum appears to be most sensitive to oxygen deficiency. As the period of anoxia is prolonged, the changes are more diffuse and there is less selectivity. (Mandel, M. M., and Berry, R. G.: *Human Brain Changes in Cardiac Arrest, Surg., Gynec. & Obst.* 108: 692 (June) 1959.)

MITRAL COMMISSUROTOMY. Twelve patients who underwent commissurotomy were evaluated clinically and catheterized 7 days before and 10-90 days and 8-30 months following operation. Though all had definite improvement all had some residual postoperative stenosis. All patients were alive 4½-6 years after operation. Only 3 have failed to maintain or increase clinical improvement. Of these 2 showed severe stenosis at reoperation. All 3 showed increased stenosis at recatheterization. One is suspected of having had recurrent rheumatic endocarditis. (Lyons, W. S., and others: *Early and Late Hemodynamic Effects of Mitral Commissurotomy, J. Lab. & Clin. Med.* 53: 499 (April) 1959.)

CARDIAC ARRHYTHMIAS While recognizing that arrhythmias may be due to many causes and that proper treatment is to correct the cause and to restore oxygen and carbon dioxide tensions to normal as quickly as possible, lidocaine was found to be a most useful drug in correction of cardiac arrhythmias. It was used in over 500 cases in doses from 40-80 mg. and repeated 6-8 times at intervals of 5-30 minutes without untoward systemic effects. It produced little depression of the pacemaker but it did produce depression of myocardial irritability, prolongation of the conduction time, the depolarization time and the refractory period. (Hitchcock, P., and Keown, K. K.: *Management of Cardiac Arrhythmias During Cardiac Surgery, South. M. J.* 52: 702 (June) 1959.)

SHOCK During the year 1958, 609 vials of metaraminol and 701 vials of *l*-norepinephrine were used for various situations, including oligemic shock. There has been no patient or

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