

frequent reversion to vasodilatation at high dose levels. Responses to norepinephrine were always consistent regardless of dose. Some inconsistency is suggested in the hypothesis that ephedrine and tyramine act exclusively by norepinephrine release. (Cohn, J. M.: *Comparative Cardiovascular Effects of Tyramine, Ephedrine and Norepinephrine in Man, Circ. Res.* 16: 174 (Feb.) 1965.)

EPINEPHRINE ARRHYTHMIA Methoxyflurane 0.5 per cent and halothane 1.0 per cent in oxygen were administered to dogs for 30 minutes under controlled intermittent positive pressure respiration. Thereafter, epinephrine in doses of 10 $\mu\text{g./kg.}$ and 100 $\mu\text{g./kg.}$ was injected into the animal. The incidence of ventricular arrhythmias as a result of intravenous administration of epinephrine during methoxyflurane anesthesia was far lower and severity was milder in degree than during halothane anesthesia. Ventricular fibrillation could not be elicited from 10 $\mu\text{g./kg.}$ of epinephrine during the inhalation of 0.5 per cent methoxyflurane. Only one case of fibrillation was noted with 100 $\mu\text{g./kg.}$ of epinephrine, while in the case of 1 per cent halothane, ventricular fibrillation occurred quite frequently both with 10 $\mu\text{g./kg.}$ and 100 $\mu\text{g./kg.}$ of intravenous epinephrine. (Saito, T., and others: *Epinephrine Induced Cardiac Arrhythmias During Methoxyflurane and Halothane Anesthesia in Dogs (Japanese), Japanese J. Anesth.* 13: 347, 1964.)

QUINIDINE A 39 year old woman was subjected to two general anesthetics in one day, the combined duration of which was eight and one half hours. Curare had been antagonized with neostigmine and the patient was fully conscious with stable vital signs. Without the knowledge of the anesthetist, the patient was given two doses of 200 mg. of quinidine each. This led to severe respiratory depression, necessitating endotracheal intubation and artificial respiration. Effects were promptly antagonized by neostigmine. Quinidine prolongs the refractory period of muscle and decreases excitability of the myoneural junction. Quinidine can cause recurarization following use of tubocurarine. (Boere, L. A.:

Recurarization Following Quinidine, Der Anaesthetist 13: 368 (Nov.) 1964.)

MORPHINE-LEVALLORPHAN Levallorphan was administered to cats after 10 mg./kg. of morphine. The drowsy pattern in the hippocampus produced by morphine was converted to a hippocampal arousal wave by levallorphan with dosage ratios of 50:1 and 10:1. The threshold of arousal response, which was elevated by morphine, was lowered by levallorphan. When 10 mg. of morphine and 1.0 mg. of levallorphan (10:1) were used, the threshold of recruiting response elevated by morphine was lowered by levallorphan. However, when the splanchnic nerve was stimulated there was no evidence of antagonism between the two drugs. Morphine depressed the activity of the hippocampus, which belongs to the limbic system and is concerned with visceral sensation, while levallorphan seemed to have an opposite effect. (Aono, M.: *Electroencephalographic Study in Anaesthesia. I. Antagonistic Effect of Levallorphan Against Morphine (Japanese) Jap. J. Anesth.* 13: 103, 1964.)

ANTIBIOTIC MUSCLE BLOCK Effect of certain antibiotics was observed in studies on denervated tibial muscle of cats. A block at the endplate is produced by tetracycline, streptomycin, dihydrostreptomycin, viomycin and kanamycin. After a short period of competitive blockade initially, a prolonged depolarization occurs, simultaneously with calcium depletion. Administration of calcium antagonizes this effect better than prostigmine. (Kubikowski, J., and Szreniawski: *Mechanism of Neuromuscular Blockade by Antibiotics, (French) Arch. Int. Pharmacodyn.* 146: 549 (Dec.) 1963.)

AMBENONIUM Ambenonium chloride has a potent anticurare effect in man which is 4 to 5 times more powerful than that of neostigmine. Maximum effect occurs in 10 to 15 minutes. Duration of the anticurare effect of ambenonium chloride is several times longer than that of neostigmine, and there is less chance of recurarization. Some of the side effects observed with ambenonium chloride were excessive salivation and mild abdominal

discomfort about 15 minutes after the injection. No influence on the blood pressure and pulse rate was observed. (Yamashita, H.: *Ambenonium Chloride (WIN8077) as a Tubocurarine Antagonist (Japanese)*, *Jap. J. Anesth.* 13: 283, 1964.)

NERVE CONDUCTION Conduction velocity in rat nerves was evaluated after alloxan injection or pancreatectomy. When a diabetic state was induced, a reduction of conduction velocity of approximately 30 per cent was noted in both sensory and motor fibers of the sciatic nerve. No slowing was observed in vagus nerve fibers. Nondiabetic alloxanized animals and starved rats showed no reduction in sciatic nerve conduction rates. Insulin treatment of the diabetic rats or addition of insulin to the *in vitro* preparation did not affect the reduced conduction velocity. (Eliasson, S. F.: *Nerve Conduction Changes in Experimental Diabetes*, *J. Clin. Invest.* 43: 2533 (Dec.) 1964.)

HYPOTHERMIA Prolonged ether anesthesia may cause definite damage to the liver, even if protection from cold stress seems to be complete. The damage is characterized by granulo-vacuolar degeneration of the liver cells, often leading to necrosis, fatty degeneration predominant in the marginal region of the lobule and complete disappearance of glycogen granules. Adequate blocking of autonomic homeostatic mechanism of the body by the use of blocking agents and mild room air cooling were found to be best for protecting the liver. (Nagayami, K.: *Histochemical and Electron Microscopic Changes in Dog Liver Following Induced Long-Term Hypothermia (Japanese)*, *Far East J. Anesth.* 4: 1 (1964).)

RESPIRATORY ALKALOSIS After respiratory alkalosis in dogs, P_{CO_2} decreased to 5.6 mm. of mercury, serum bicarbonate fell to 6 mEq. per liter and pH rose to 7.7. Serum potassium level fell from 4.4 to 3.0 mEq. per liter. Phosphorus decreased from 2.7 to 2 mEq. per liter. Lactic acid rose from 5 to 8 mEq. per liter. Electrocardiographic changes were not constant, and seemed to depend more on the magnitude of potassium change than upon absolute levels. Hyper-

ventilation of digitalized patients may be dangerous. (Murray, W., Andersen, M. W., and William-Olsson, G.: *Biochemical and Electrocardiographic Effects of Hypocarbica*, *Arch. Surg.* 90: 290 (Feb.) 1965.)

VENTILATION-PERFUSION Employing a helium technique, rate of disappearance of inert gas during washout was followed simultaneously in alveolar gas and in arterial blood. Relative perfusion of the hypoventilated (slow) compartment was calculated and its ventilation-perfusion ratio was compared to the alveolar ventilation-perfusion ratio of the total respiratory system. In five normal subjects, the slow compartment received 1.8 per cent of total ventilation and 2.3 per cent of lung perfusion and had an alveolar ventilation-perfusion ratio 81 per cent of the total ratio. By comparison, study of an emphysematous subject showed that 10 per cent of alveolar ventilation was distributed to the slow compartment. The technique requires only one analytical method and is therefore applicable on a large scale. (Klocke, R. A., and Farhi, L. E.: *Simple Method for Determination of Perfusion and Ventilation-Perfusion Ratio of the Underventilated Elements (the Slow Compartment) of the Lung*, *J. Clin. Invest.* 43: 2227 (Dec.) 1964.)

PULMONARY COMPLICATIONS Preoperative pulmonary function, intracardiac pressures and degree of dyspnea were related to the incidence of postoperative respiratory insufficiency in 102 adult patients who underwent cardiac surgery. The purpose was to seek a reliable method of prognosticating the risk of postoperative respiratory insufficiency, especially after the use of cardiopulmonary bypass. When the heart-lung pump was used, 24 of 30 patients with a preoperative vital capacity less than 80 per cent of the predicted normal developed respiratory insufficiency, whereas only eight of 41 patients with a normal vital capacity had this complication. In 26 patients where the preoperative vital capacity and gas diffusion were both normal, only three developed postoperative respiratory insufficiency. Other single or combined pulmonary function abnormalities, including tests of the mechanics of breathing,