

metabolic acidosis. The liver is able to eliminate the excess lactate produced by peripheral muscle if both are at the same temperature. If the liver is cooler than the muscle, excess lactate accumulates, contributing to metabolic acidosis. The technique of isothermia does not compromise circulation as does the surface cooling technique alone. (Wolfson, S. K., and others: *Isothermic Technique For Profound Hypothermia and its Effect on Metabolic Acidosis*, *J. Thor. Cardio. Surg.* 45: 466 (Apr.) 1963.)

HYPOTHERMIA Six patients out of thirteen received hydrochloric acid intravenously to reduce pH during perfusion-induced hypothermia followed by an equivalent amount of sodium bicarbonate during rewarming. There was no statistical difference in the rise of lactate or "excess" lactate as long as perfusion was adequate. (Ogata, T., and others: *Metabolic Changes in Deep Perfusion Hypothermia for Cardiac Surgery*, *J. Thor. Cardio. Surg.* 45: 610 (May) 1963.)

DEEP HYPOTHERMIA Hypothermia below 20° C. was induced by immersion. Moderate hypothermia was used for major general, thoracic and neuro-surgery. Temperatures below 25° C. were used in 65 cases of open heart surgery. Safe circulatory occlusion is possible for 10 minutes at 30°, for 20 minutes at 27°, for 30 minutes at 25° and for 60 minutes at 20°. Artificial coronary perfusion was unnecessary during deep hypothermia and, therefore, a completely dry field could be obtained. (Seta, K. K., Yonezawa, T., and Okamura, H.: *Use of Deep Hypothermia in Thoracic Surgery*, *Der Anesthetist* 12: 107 (Apr.) 1963.)

BRAIN COOLING Electroencephalographic changes occur with hypothermia, and are different with systemic as compared with local cooling. When the whole animal is cooled, the electrical activity of the cerebral cortex decreases. When the brain surface is cooled below body temperature, the sensory evoked potential is increased in amplitude and duration, and the discharge of unitary spikes is augmented. All changes are reversed by rewarming. (Bindman, L. J., Lippold, O. C. J.,

and Redfean, J. W. T.: *Comparison of the Effects on Electro cortical Activity of General Body Cooling and Local Cooling of the Surface of the Brain*, *Electroenceph. Clin. Neurophysiol.* 15: 238 (Apr.) 1963.)

DEXTRAN Following profound hypothermia (10° C. esophageal) and 15 to 60 minutes of circulatory arrest in dogs, multiple focal areas of necrosis developed in the gray and white matter of brains. Such areas were related to the presence of blood in the brains during experimental conditions. If dextran is injected into the common carotid artery immediately after arresting the circulation, the number and size of cerebral necrotic areas are markedly reduced. Systemic injection of dextran also prevented brain damage. No cerebral necrosis due to exhaustion of metabolites or to profound hypothermia occurred without circulatory arrest. (Edmunds, L. H., and others: *Prevention of Brain Damage During Profound Hypothermia and Circulatory Arrest*, *Ann. Surg.* 157: 637 (Apr.) 1963.)

PROPHYLACTIC DIGITALIS Review of the recent experimental and clinical evidence on the pharmacologic effects of digitalis leads to the conclusion that the drug acts by a positive inotropic action on all types of muscle. This results in increased myocardial contraction, cardiac output and arteriolar pressure, and a drop in right atrial pressure and with splanchnic blood trapping. These changes occur alike in both normal and failing hearts, although there is a quantitative difference. A salutary effect on cardiac arrhythmias in failing hearts results through improved myocardial function. There is no convincing evidence that the long-held objection to its use in the non-failing heart, based on a reduced cardiac output, has any basis in fact. Any such output reduction is fleeting and of no clinical importance. Conversely, there is increasing evidence to suggest its prophylactic use in any heart in which severe stress is anticipated. Toxic effects can be avoided by slow oral administration, reserving rapid digitalization for emergency situations. Digitalization is recommended preoperatively in elderly patients, patients with known heart disease, or patients undergoing

cardiac surgery with the anticipation that prophylactic value may follow and without fear of detrimental results. (Rodman, R., and Pastor, B. H.: *The Hemodynamic Effects of Digitalis in the Normal and Diseased Heart*, *Amer. Heart J.* 65: 564 (Apr.) 1963.)

HEART NOREPINEPHRINE Utilizing serial blood samples from the coronary sinus and femoral artery and biopsies from an atrial appendage, fluorometric determinations of blood and tissue norepinephrine content were done before, during and after intravenous injections of guanethidine sulfate (15 mg./kg. free base) and reserpine (3 mg./kg. free base) in a small series of pentobarbital anesthetized dogs. Following guanethidine, there was immediate marked release of norepinephrine from the heart indicated by increased concentration in coronary sinus blood and a reduction in the atrial appendage tissue concentration. The increased coronary sinus levels of norepinephrine persisted three hours and were associated with appropriate adrenergic responses; thereafter the continued depletion of tissue norepinephrine was unaccompanied by either elevated coronary sinus levels or adrenergic responses. Following reserpine, there was no immediate rise in coronary sinus blood norepinephrine and the adrenergic response was consistently smaller than with guanethidine. However, there was marked decrease of atrial appendage tissue concentration of norepinephrine after four hours. The initial rapid reduction of norepinephrine in heart tissue following reserpine may be due to early alteration of metabolism of the catecholamines, perhaps a reduced synthesis in heart muscle, while the initial reduction following guanethidine is probably secondary to early rapid release of stores, altered metabolism occurring only later. (Harrison, D. C., and others: *Relationships Between the Release and Issue Depletion of Norepinephrine from the Heart by Guanethidine and Reserpine*, *Circ. Res.* 12: 256 (Mar.) 1963.)

METHYLDOPA Methyldopa, an inhibitor of decarboxylase, may exert its hypotensive action by inhibiting the synthesis of noradrenaline, but this is not certain. Dosage is less critical than with ganglionic blocking agents and the degree of postural hypotension is usu-

ally less. Side effects are minimal and judicious combination of this drug with Rauwolfia alkaloids, ganglionic blocking agents and others to suit each patient's needs will be more widely used. (Smirk, H.: *Hypotensive Action of Methyldopa*, *Brit. Med. J.* 1: 147 (Jan. 19) 1962.)

TRASYLOL Burns fatal to mice in the control series were treated with very high doses of Trasylol with 95 to 100 per cent survival. Trasylol is a non-allergenic polypeptide which inhibits trypsin, kallikrein, chymotrypsin and plasmin between pH 5 and 7.8. Normal trypsin inhibitor is ineffective between pH 6.5 and 6.8. (Koslowski, L., Darckowa, D., and Waschkeit, G.: *Trasylol*, *Chirurg.* 33: 533, (Dec.) 1962.)

VASOPRESSIN Circulatory effects of vasopressin are increased arterial pressure, bradycardia, and reduced splanchnic perfusion after larger dose; coronary, renal and lower extremity blood flows are reduced. The synthetic product has an effect 5 times greater on blood pressure and 10 times less on antidiuresis than naturally found lysin-vasopressin. The action is directly on vascular musculature. Side effects are pallor of skin, nausea, vomiting, defecation and micturition. Indications for use are bleeding of esophageal varices and hypovolemic shock. (Tsakiris, A., and Buhlmann, A.: *Effects on Circulation of a New Vasopressin*, *Deutsch. Med. Wschr.* 88: 46 (Jan.) 1963.)

ANGIOTENSIN Digital vascular responses to intravenous and intra-arterial infusions of angiotensin II and norepinephrine were studied in man. Angiotensin II constricts the precapillary (resistance) vessels of the digit without associated constriction of the post-capillary (capacitance) vessels. Norepinephrine produces constriction of both pre and post-capillary blood vessels. (DePasquale, N. P., and Burch, G. E.: *Angiotensin II, Digital Blood Flow, and the Pre-capillary and Post-capillary Blood Vessels of Man*, *Ann. Intern. Med.* 58: 278 (Feb.) 1963.)

ERGOMETRINE Forceps delivery or cesarean section was accomplished with light