

tained by providing sufficient amino acids and a moderate supply of calories. While sodium, chloride, potassium, magnesium and phosphate mixtures have been used in place of physiological saline, and while this is certainly in keeping with principles of good nutrition administered by any route, exact requirements for electrolytes under conditions of complete parenteral nutrition have not been defined. (Geyer, R.: *Parenteral Nutrition, Physiol. Rev.* 40: 150 (Jan.) 1960.)

INTRACELLULAR WATER Water contributes about two-thirds of the body weight, and nearly three-quarters of this water is in cells. The fact that most tissues are rich in potassium, while extracellular fluid is rich in sodium suggests that the two primary subdivisions of body water are as distinct chemically as topographically. Moreover, different soluble substances introduced into the body become diluted to different degrees further indicating that body water is not in a single homogeneous liquid phase, but is subdivided by partitions which some substances penetrate more readily than others. It is not known how water crosses biological membranes under the influence of gradients of activity, but the consensus of published opinion is that most mammalian cells conduct their fluid exchanges in osmotic equilibrium, without active transport of water. External osmotic pressure is important for the regulation of cell volume chiefly because it determines how such water shall be associated with a given quantity of intracellular solute. Cellular metabolism is equally important chiefly because it determines how much intracellular solute there shall be. In the intact animal with metabolism proceeding steadily, extracellular osmolarity controls the water balance of the cells. Hence, thirst and water diuresis, which rather precisely guard against excessive or deficient levels of extracellular osmolarity may be regarded as mechanisms controlling the volume of extracellular fluid. Since they do this by stabilizing an extracellular osmolarity which is mostly due to sodium salts, they also set the stage for the regulation of extracellular fluid volume by adjustments of the renal excretion of sodium. For so long as its osmolarity is held constant, the volume of extracellular fluid must be pro-

portional to the amount of sodium which it contains, and this depends upon how much of the daily intake the kidneys retain. Hence, the kidneys directed in ways which largely remain to be elucidated are able to regulate the volume of water inside the cells by controlling the excretion of water, and the volume outside the cells by controlling the excretion of sodium. A detailed consideration of these possibilities is presented. (Robinson, J. R.: *Metabolism of Intracellular Water, Physiol. Rev.* 40: 112 (Jan.) 1960.)

PULMONARY EDEMA The action of the digitalis glycosides (acetylstrophanthidin, ouabain and digitoxin) was tried before, during and after the onset of experimental pulmonary edema. Pulmonary edema was produced by five different methods in 227 rabbits, 87 rats and 16 dogs. No useful effect of either rapid or slow-acting digitalis glycosides was demonstrated. In previous experiments, pulmonary edema had been prevented by the use of morphine, phenobarbital and chloral hydrate, or by the use of sympatholytic drugs or the inhalation of alcohol vapor. Digitalis may act on the right overloaded ventricle, thus increasing rather than decreasing the severity of pulmonary edema. (Testelli, M. R., Musiker, S., and Luisada, A. A.: *Effect of Digitalis Glycosides in Paroxysmal Pulmonary Edema, J. Appl. Physiol.* 15:83 (Jan.) 1960.)

EMPHYSEMA Eighty-five per cent of all patients with pulmonary emphysema exhibit recognizable electrocardiographic abnormalities. Occasionally they are present in the absence of pulmonary impairment but invariably are present with symptomatic disease. The earlier and most common change is that the P wave will be prominent and exhibit an axis close to plus 90 degrees. As the emphysema progresses the standard and precordial leads acquire S waves and the P waves become larger. (Littman, D.: *The Electrocardiographic Findings in Pulmonary Emphysema, Am. J. of Cardiology* 5: 339 (March) 1960.)

BLOOD TRANSFUSION Every transfusion is a potential source of transmission of disease. About one in every 300 units of blood transmits viral hepatitis. Two to four per cent

of all units of stored blood contain bacteria. Overload reactions may develop due to overzealous transfusion. Plasma transfusion reactions and those due to leuco-agglutinins and to allergies may appear. Too many patients are given single pint transfusions. (Hoxworth, P. I.: *Physicians' Responsibility in Blood Transfusion, Surg. Gynec. & Obst.* 110: 237 (Feb.) 1960.)

PLASTIC TUBING Some brands of polyvinyl chlorides interfere with cardiac contraction. This observation, made during perfusions of isolated rat hearts, may be of some clinical value, since plastics are often used in intravenous sets and extracorporeal pumps. (Meyler, F. L., Willebrands, A. F., and Durrer, D.: *The Influence of Polyvinyl Chloride (PVC) Tubing on the Isolated Rat's Heart, Circulation Res.* 8: 44 (Jan.) 1960.)

HEMOLYSIS Small amounts of bank blood refluxing from filter chambers into solutions being administered following transfusion may undergo hemolysis. Hemolysis is promoted by increased temperature, older blood, more dilute reflux dilutions and length of time the mixture stands. More hemolysis occurred in isotonic solutions of 4.3 per cent dextrose and 0.18 per cent sodium chloride than with five per cent dextrose solutions. (Noble, T. C., and Abbott, J.: *Haemolysis of Stored Blood Mixed with Isotonic Dextrose-Containing Solutions in Transfusion Apparatus, Brit. Med. J.* 2: 865 (Oct. 31) 1959.)

BLOOD VOLUME Considerations of variation in blood volume relative to body weight exists in normal patients—chiefly due to variances in their body fat. Cathectic individuals without advanced cancer, renal disease, hepatic disease or chronic infection may have normal or supernormal plasma volume associated with subnormal hematocrit and hemoglobin concentration. Correction of anemia by blood transfusion in the presence of normal or supernormal blood volume may be dangerous—leading to pulmonary edema or death. (Pender, J. C. Jr., and others: *A Consideration of Indications for Preoperative Transfusions Based on Analysis of Blood Volumes and Circulatory Proteins in Normal and Malnourished Patients*

With and Without Cancer, Ann. Surg. 151: 303 (March) 1960.)

SERUM HEPATITIS Serum hepatitis has been reported following the use of fibrinogen in the treatment of hypofibrinogenemia. Fibrinogen should not be used in hypofibrinogenemia unless bleeding is severe enough to warrant the calculated risk. Prophylactic injections of gamma globulin should be seriously considered. (Zaino, E. C.: *Homologous Serum Hepatitis Following the Administration of Fibrinogen, Obst. & Gynec.* 15: 404 (March) 1960.)

LEVARTERENOL NECROSIS The subcutaneous infiltration of 250 cc. of solutions containing 8 to 32 mg. levarterenol/liter for two hours produced sloughs of the skin of the abdomen of rabbits. Data showed that levarterenol-phenolamine solutions containing 2.5 to 10 mg. of phenolamine produced no slough. Sloughs were reduced with mixtures containing 16 and 32 mg. levarterenol and 1 mg. phenolamine. (Zucker, G., and Eisinger, R. P.: *Prevention of Levarterenol-Phenolamine Necrosis in Rabbits by Use of Levarterenol-Phenolamine Mixtures, Proc. Soc. Exp. Biol. & Med.* 103: 260 (Feb.) 1960.)

STOMACH INFLATION An unconscious patient was given 4 to 6 liters of oxygen by nasal catheter. Within one hour she developed perforation of the stomach near the cardia with massive pneumoperitoneum but recovered following surgery. Similar cases are quoted, including a fatal case following inadvertent insertion of an endotracheal tube in to the esophagus. (Kootz, F.: *Perforation of the Stomach Due to Endonasal Oxygen Administration, Der Anesthetist* 9: 22 (Jan.) 1960.)

POSTOPERATIVE EKG In an unselected series of 496 surgical patients there were 12 (2.4 per cent) myocardial infarctions postoperatively. Since all infarctions occurred in patients over 50 years old the incidence in this group was 4.5 per cent. Ten of the 12 patients preoperatively had hypertension, peripheral vascular disease and/or diabetes mellitus, precursors of coronary heart disease. Six (50 per cent) of the infarctions would