

BLOOD LOSS DETERMINATION A device based on the phenomenon of electrical conductivity is used to measure electrical resistance of a solution. When blood is added to water a direct proportional relationship exists between the concentration of the blood and the conductance. The blood loss monitor was used in 62 patients undergoing thoracic or cardiovascular surgery. The device removes the blood electrolytes from sponges, brings blood from the wound by suction, and automatically compensates for temperature changes in the measuring chamber. Irrigation must be done with either water or 2.5 per cent glucose solution. Average blood loss up to the opening of the pleura was 364 cc. with a range from 150 to 750 cc. (Klopstock, R., and others: *Instantaneous Blood Loss Determination During Thoracic Surgery, J. Thoracic & Cardiovasc. Surg.* 38: 746 (Dec.) 1959.)

HYPOTENSION The immediate physiologic consequences of a change in the body's position from a supine to an erect position are: dilatation of the vascular beds below the heart, decreased venous return to the right atrium, decreased cardiac output, decreased peripheral vascular resistance, decreased arterial pressure, and decreased cerebral blood flow. The most important compensatory mechanisms that preserve constancy of cerebral blood flow are: decreased cerebral vascular resistance, reflex arteriolar constriction, reflex venoconstriction, increased tissue pressure in the legs, reflex increase in heart rate, and reflex release of norepinephrine. In certain disease states the compensatory reactions are absent or deficient: endocrinopathies, potassium depletion, hypovolemia or anemia, central neuropathies, autonomic neuropathies, all of which are discussed in detail. (Wagner, H. N., Jr.: *Orthostatic Hypotension, Bull. of the Johns Hopkins Hosp.* 105: 322 (Dec.) 1959.)

BLOOD LOSS Postmenopausal patients lost much less blood than did the premenopausal patients during vaginal hysterectomy. Use of surgical pituitrin locally in the paracervical tissues resulted in an average salvage of 104 cc. (44 per cent) during vaginal hysterectomy and 193 cc. (33 per cent) during

vaginal hysterectomy and repair. Pituitrin reduced the necessity for transfusion by 68 percent. (Pratt, J. H., and others: *Blood Loss During Vaginal Hysterectomy, Obst. & Gynec.* 15: 101 (Jan.) 1960.)

FAT EMBOLIZATION When cardiopulmonary bypass using stationary screen oxygenators for prolonged periods has been used in dogs, microscopic examination of brain, kidney and lung tissues showed varying degrees of systemic fat embolization. These findings were not altered by changes in the heparin level, the utilization of protamine or by the type of anesthesia employed. Very few fat emboli were found if the oxygenator was omitted from the circuit. (Owens, G., and others: *Experimental Alterations of Certain Colloidal Properties of Blood During Cardiopulmonary Bypass, J. Appl. Physiol.* 14: 947 (Nov.) 1959.)

CARDIAC CATHETERIZATION Cardiac catheterization may produce cyanotic or syncopal attacks. Infundibular obstruction or spasm, resulting in an increased right-to-left shunt through the ventricular septal defect, is the most probable cause. In treatment, morphine intravenously has helped, but other drugs are of little value. Cyclopropane anesthesia with succinylcholine intravenously may cause improvement, but an emergency Tausig-Blalock anastomosis might be required. (Brando, J. L., and Zion, M. M.: *Cyanotic Spells and Loss of Consciousness Induced by Cardiac Catheterization in Patients with Falot's Tetralogy, Am. Heart J.* 59: 10 (Jan.) 1960.)

BYPASS BLOOD FLOW An apparatus has been constructed which accurately measures blood flow electromagnetically during cardiopulmonary bypass or other extracorporeal perfusion using the square-wave electromagnetic flow meter. It is a cannulating blood flow device and does not interfere with the flow of blood in the extracorporeal circuit. Its advantages are: (1) accuracy and dependability, (2) direct read-out and monitoring, (3) simultaneous recording along with other modalities on a multiple channel recorder, (4) simplicity of inclusion in the bypass circuit

and (5) ease of operation. (*Cordell, R. A., and Spencer, M. P.: Electromagnetic Blood Flow Measurement in Extracorporeal Circuits, Ann. Surg. 151: 71 (Jan.) 1960.*)

EXTRACORPOREAL CIRCULATION

Significant depression of kidney function in the dog, as measured by renal plasma flow, glomerular filtration rate, and electrolyte excretion, occurs during extracorporeal circulation even at high flow rates. There was a more severe depression at low flow rates than at high flow rates. These existing rates of flow or arterial pressure affect renal function during extracorporeal circulation. The prior flow rates, however, do not influence it significantly except when the flow rate enhances an already existing susceptibility to renal damage such as from hemolysis. (*Senning, A., and others: Renal Function During Extracorporeal Circulation at High and Low Flow Rates, Ann. Surg. 151: 63 (Jan.) 1960.*)

EXTRACORPOREAL CIRCULATION

The Clark bubble pump-oxygenator was used for fifty patients during operations for correction of cardiac defects. Blood volume studies were carried out, in addition to the usual observations. In the post-perfusion period, a salutary effect on arterial and venous pressures was noted when calcium gluconate was given to those patients who had received a large amount of citrated blood. Five hundred mg. of calcium gluconate were given for each 500 cc. of transfused blood. (*Kaplan, S., and others: Blood Volume During and After Total Extracorporeal Circulation, A. M. A. Archives of Surgery 80: 39 (Jan.) 1960.*)

HEMOLYSIS FROM PUMPS

To test in vitro the hemolytic properties of pumps used in extracorporeal circulation, a system was made of polyvinyl chloride tubing. While the plastic tubing, siliconized glassware, junctures, and construction of the system all contribute to the damage to the erythrocytes, pumps caused the most trauma. The Dale-Schuster pumps, with semilunar valves, cause less hemolysis. Removal of free hemoglobin as it accumulates appears to be important in the clinical application of long-term perfusion. This can be accomplished by exchange trans-

fusions. (*Cahill, J. J., and Kolff, W. J.: Hemolysis Caused by Pumps in Extracorporeal Circulation (in vitro evaluation of pumps), J. Appl. Physiol. 14: 1039 (Nov.) 1960.*)

HYPOTHERMIA

Extracorporeal circulation and hypothermia were carried out by a pump oxygen-heat-exchanger device in 14 healthy mongrel dogs anesthetized with intravenous sodium pentobarbital. After quinine hydrochloride perfusion and stopping the pump, circulatory standstill was produced. It was found that periods of 60 minutes of complete circulatory standstill were tolerated in 10 dogs at temperatures of 10 degrees C. and lower. (*Sealy, W. C., and others: Tolerance of the Profoundly Hypothermic Dog to Complete Circulating Standstill, Proc. Soc. Exp. Biol. & Med. 102: 691 (Dec.) 1959.*)

HYPOTHERMIA

Hypothermia is recommended during shunt operations for correction of portal hypertension and esophageal varices. Protection of the liver is provided by the hypothermia. Body temperature of 30 degrees to 32 degrees C. is recommended. Advantages are: reduced metabolism of liver, less anesthesia is required, better oxygenation is provided, and blood loss may be lessened. It was thought that the 12 patients for whom this technique was used had a more satisfactory postoperative course than others. (*Postlethwait, R. W., and others: Portacaval Shunts, A. M. A. Archives of Surgery 80: 133 (Jan.) 1960.*)

BLOOD GASES AND EEG

Sixteen patients with varying degrees of respiratory failure were found as a class to show better correlation between electroencephalographic dysrhythmias and clinical state than between electroencephalographic dysrhythmias and partial pressure of oxygen or carbon dioxide or carbon dioxide content in blood. Clinical signs were also a poor index of blood gas variations in individual cases. In general electroencephalographic frequencies slowed and voltage increased as blood gas values departed from normal, but individual cases showed no correlation. Inhalation of oxygen produced no electroencephalographic improvement. Changes in pH had no discernible