

of the myocardium during ischemia can be expected to minimize postoperative myocardial depression. The volume of homologous blood used for priming of the pump-oxygenator should be kept to a minimum, in view of the possible ill effects of large amounts of homologous blood. When cardiac performance is poor soon after repair, sodium bicarbonate is indicated and usually seems to improve cardiac output. Intracardiac or intravenous injection of calcium chloride has an immediate although transient beneficial effect on cardiac performance and is of value when large amounts of citrated blood have been administered. (Kirklin, J. W., and Theye, R. A.: *Cardiac Performance After Open Intracardiac Surgery*, *Circulation* 28: 1061 (Dec.) 1963.)

EXTRACORPOREAL CIRCULATION

Plasma expanders or 5 per cent levulose were substituted as priming fluids for blood during extracorporeal circulation in animals. No essential changes in blood gases and acid-base balance were observed under the condition of hypothermia (rectal temperature 15° C.) with the exception of a metabolic acidosis. This could be prevented by addition of sodium bicarbonate to the perfusing fluid. Hypothermia by heat exchanger is a prerequisite for the use of blood substitutes as perfusates. Dilution of blood and the associated decrease of the oxygen carrying capacity is partially compensated by the increased solubility of oxygen in diluted and cold blood. Partial re-infusion of the pump blood volume will prevent major blood loss. Advantages of pump priming by blood substitutes are decreased incidence of serum hepatitis, smaller number of cross-matchings, and ready availability of extracorporeal circulation in emergencies. (Schlosser, V., and others: *Use of Blood Substitutes in Extracorporeal Circulation*, *Langenbeck Arch. Klin. Chir.* 303: 223, 1963.)

POSTPERFUSION ANEMIA Fifty-eight patients had preperfusion and postperfusion blood volume determinations made radioactively together with peripheral hematocrits. The postperfusion hematocrit did not reflect cell volume changes occurring during perfusion. The late decline of hematocrit after perfusion was often the result of disproportions

of red cell and plasma volumes which occurred asynchronously. Total blood volume, red cell volume, and plasma volume augmentation was demonstrable in the face of a falling hematocrit. Possibly these paradoxical relationships between hematocrit and erythrocyte volumes were related to sequestrative changes of the homologous blood volume. Although total blood volume deficits after perfusion with hemodilution techniques were greater than when homologous whole blood alone was used, proportionally fewer red cells were sequestered. This is in consonance with the clinical observation that stasis secondary to homologous blood exchange is ameliorated by hemodilution. (Gadbois, H. L., and Litwak, R. S.: *Postperfusion Hematocrit*, *J. Thorac. Cardio. Surg.* 46: 772 (Dec.) 1963.)

HEMODILUTION Results of experimental cardiopulmonary bypass procedures in dogs indicate that the relatively large volumes of blood required for priming a rotating disc oxygenator can be diluted without harm to the animal. Arterial and venous oxygen saturations during perfusion remained normal in all groups of animals. Only in those subjected to 100 per cent hemodilution did venous oxygen saturation show a decrease, an hour after perfusion. Flow rates during perfusion were highest with dextran as the hemodilution agent and lowest with undiluted blood. No bleeding problems were encountered. Plasma hemoglobin levels were highest with 5 per cent glucose-in-water as the dilution agent, and lowest with dextran. Actual platelet destruction was decreased by the hemodilution techniques. Unaccountable blood loss was least with dextran and greatest with 5 per cent glucose-in-water; in all experimental groups, this unmeasurable loss affected the red cell mass chiefly and 100 per cent hemodilution did not prevent such loss. (Kahn, D. R., and others: *Hemodilution Studies in Extracorporeal Circulation With the Use of a Rotating-Disc Oxygenator*, *J. Thorac. Cardio. Surg.* 46: 765 (Dec.) 1963.)

HEMODILUTION Pump priming with a balanced electrolyte solution prior to extracorporeal circulation results in hemodilution. In a group of patients treated in this way,