Literature Briefs

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Literature Briefs were submitted by Drs. R. Clark, B. Dalton, B. Das, L. J. Drop, A. Goldblatt, J. Levitt, W. Mannheimer, and J. Reitan. Briefs appearing elsewhere in this issue are part of this column.

Circulation

INTRA-AORTIC BALLOON COUNTERPULSATION Catecholamine support after acute myocardial infarction carries the risk of extension of ischemia through increased myocardial oxygen consumption. Counterpulsation using intra-aortic balloon pumping (IABP) was used successfully for six patients with acute myocardial infarction complicated by mitral regurgitation and five patients with ventricular septal defects following failure of drug treatment.

Patients with ventricular septal defects had reductions in mean pulmonary capillary wedge pressure (Swan-Ganz Catheter), systemic A-VO₂ content difference and mean pulmonary/systemic flow ratio, while heart rate was unchanged and arterial pressure increased slightly. Patients with mitral regurgitation had decreased mean pulmonary capillary wedge pressure and heart rate, while mean arterial pressure was unaltered and cardiac output increased slightly. IABP permitted completion of selective coronary and left ventricular angiography in preparation for emergency surgery in nine cases. Maximal hemodynamic improvement with IABP was usually reached by 24 hours. (Gold, H.K., and others: Intra-aortic Balloon Pumping for Ventricular Septal Defect or Mitral Regurgitation Complicating Acute Myocardial Infarction. Circulation 47: 1191–1196, 1973.)

Respiration

ARTERIAL BLOOD GASES DURING LAPAROSCOPY Arterial blood gases were monitored in patients undergoing laparoscopy for tubal ligation under local anesthesia and sedation. There was significant hypventilation and hypoxenemia secondary to narcotic sedation; however, laparoscopy caused no additional change. The authors recommend 1) that supplementary O₂ be administered, 2) that N₂O be used to produce the pneumoperitoneum, and 3) that the patient be encouraged to take occasional deep breaths during the procedure. (Alexander, G.D., and others: Outpatient Laparoscopic Sterilization under Local Anesthesia. Am J Obstet Gynecol 116: 1065–1068, 1973.)

BLOOD FILTRATION Thirty-seven patients undergoing open-heart surgery were divided into four groups depending upon the quality of filtration used for the administered blood. No filter was used in Group I (five patients). In Group II (seven patients) a dacron-wool filter was placed in the coronary suction line. In Group III (17 patients) this plus an additional filter was placed in the primary line, and in Group IV (eight patients) a filter was placed in the arterial line in addition to the ones in Group III. The extracorporeal circuit was primed with two units of ACD-stored blood. Wedge biopsies were taken from the lungs (middle lobe or lingula) of each patient—one prior to extracorporeal circulation and one at the end of the bypass. Control lung biopsies appeared normal under the electron microscope. In Group I all biopsies taken one hour after bypass showed extensive occlusion of the pulmonary microcirculation by aggregates of disintegrating leukocytes. Perivascular edema was present in the involved areas of the interalveolar septum. The endothelium of the affected vessels, as well as overlying type I alveolar epithelium, appeared swollen and frequently ruptured. Exudates were observed in the interstitial and alveolar air spaces. In Group II, small or single platelets and leukocytes or their disintegrated remnants were observed in the pulmonary microcirculation. Subendothelial infiltration by leukocytes and perivascular edema were also evident. In Group III the only abnormality observed was focal interstitial edema. The biopsies of Group IV were indistinguishable from control biopsies taken before bypass. (Connell, R.S., and others: The Effect on Pulmonary Ultrastructure of Dacron-wool Filtration During Cardiopulmonary Bypass. Ann Thorac Surg 15: 217, 1973.)