

Literature Briefs

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Literature briefs were submitted by Drs. J. Bland, L. Brand, L. Cooperman, L. H. Cronan, B. Dalton, M. Gold, A. Goldblatt, J. Harp, E. Lowenstein, L. C. Mark, H. Rackow, G. Rockwell, and E. Salanitro. Briefs appearing elsewhere in this issue are part of this column.

Circulation

CAPILLARY PERMEABILITY AND DIFFUSIVITY IN DIABETES Microangiopathy, which occurs in diabetics and in certain patients with prediabetes, is characterized by thickening of the basement membrane and deposition of PAS-staining material beneath the vascular endothelium, leading to retinopathy, neuropathy, nephropathy and abnormalities of microcirculatory function in general. Capillary diffusion capacity (CDC), an index of microcirculatory function dependent on permeability as well as surface area of the microvascular bed, has been shown to be elevated in diabetes. However, it is not known whether changes in CDC in diabetes are due to alterations in permeability or changes in surface area. The capillary filtration coefficient (CFC) is determined exclusively by the surface area of the microvascular bed. Thus, simultaneous measurement of CDC and CFC will establish which of the two factors is abnormal.

Using calf venous-occlusion plethysmography and the measurement of ^{133}Xe and ^{131}I clearances from hyperemic anterior tibial muscle, the authors were able to differentiate between changes in permeability and changes in surface area. The finding of normal CFC and abnormal CDC in diabetic patients with microvascular disease suggests abnormal permeability of small vessels rather than an increase in surface area. (Alpert, J. S., and others: *Capillary Permeability and Blood Flow in Skeletal Muscle of Patients with Diabetes Mellitus and Generic Prediabetes*, *N. Engl. J. Med.* 283: 454-460, 1972.) **ABSTRACTER'S COMMENT:** The implications of "leaky" vasculature to water, electrolyte and drug therapy

as well as the evaluation of distribution of anesthetic drugs are of major importance to the anesthetist. Again, the lack of appropriate data which we can apply to our patient material is obvious. The techniques described are sufficiently benign to justify wider application in the operating room setting.

AORTO-CORONARY BYPASS GRAFTS Blood flow was measured electromagnetically at operation in 1 aorto-coronary vein grafts in 21 patients, and resistance to flow distal to the graft was calculated. The vasodilatory effect of papaverine (10 mg) injected into the graft was also recorded. Flow through left-sided grafts was 73 ± 23 ml/min and flow through right-sided grafts, 53 ± 25 ml/min; calculated resistances were 1.2 ± 0.4 and 2.6 ± 1.6 units, respectively. Papaverine approximately doubled flow and halved resistance. Four patients, with three grafts to the right and one graft to the left, had resting flows of 30, 9, 14 and 45 ml/min, with resistances of 2.5, 8.0, 6.5, and 1.4 units, respectively. Although responses to papaverine were appropriate, graft occlusion was present in three as demonstrated by coronary angiography performed two weeks to six months postoperatively, and in the fourth patient at autopsy three weeks postoperatively. Resting blood flow greater than 50 ml/min provided a better prognostic indicator of eventual graft patency than the magnitude of vasodilatation following the injection of papaverine. On the other hand, no graft with a flow of 30 ml/min or less remained patent regardless of the magnitude of response to papaverine. (Moran, J. M., Chen, P. Y., and Rheinlander, H. F.: *Coronary Hemodynamics Following Aorto-coronary Bypass Graft*, *Arch. Surg.* 103: 539-544, 1971.)

CORONARY-ARTERY SURGERY AND SURVIVAL Patients with coronary-artery disease treated by surgery were classified according to survival and type of surgery (single pedicle, multiple pedicle, vein grafts). The