

near-maximal increases in P_{pa} (11 mm Hg) occurred with a P_{O_2} of 40 mm Hg. In intact cats, hypoxic responses were absent above pH 7.5. The data indicate a possible relationship between intracellular pH and hypoxic pulmonary vasoconstriction. (Viles, P. H., and Shepherd, J. T.: *Relationship between pH, P_{O_2} , and P_{CO_2} in the Pulmonary Vascular Bed of the Cat*, *Amer. J. Physiol.* 215: 1170 (Nov.) 1968.)

VASODILATOR EFFECT OF HYPERCAPNIA

The effect of hypercapnic acidosis caused by the intra-arterial infusion of acid phosphate buffer solutions (pH 7.4 to 5.8) on forearm blood vessels was studied in human volunteers. The lower the pH of the infused buffer solution, the greater the increase in venous blood P_{CO_2} and the decrease in venous blood pH. Hypercapnic acidosis of increasing severity was associated with a progressive increase in forearm blood flow and forearm vascular conductance due to decreased vascular tone. The relationship between vascular conductance and venous blood P_{CO_2} or pH during hypercapnic acidosis produced in such a fashion was similar to that obtained in previous studies of hypercapnic acidosis. Hypercapnic acidosis in the human forearm is associated with vasodilatation regardless of the manner in which it is brought about. The magnitude of the response is sufficiently great to warrant further investigation of the physiologic role of hypercapnic acidosis in the local regulation of the blood flow. (Kontos, H. A., Richardson, D. W., and Patterson, J. L., Jr.: *Vasodilator Effect of Hypercapnic Acidosis on Human Forearm Blood Vessels*, *Amer. J. Physiol.* 215: 1403 (Dec.) 1968.)

HYPERCAPNIA AND ACIDOSIS

The effects of hypercapnic acidosis on heart rate, blood pressure, blood flow and vascular resistance in the human forearm were investigated. Responses to hypercapnic acidosis produced by inhalation of 7 per cent CO_2 were compared with the effects of hypercapnia without acidosis produced by inhalation of 7 per cent CO_2 and simultaneous intravenous infusion of isotonic $NaHCO_3$ solution to maintain arte-

rial blood pH at the resting level. Hypercapnic acidosis increased heart rate and mean arterial blood pressure, produced no change in vascular resistance in the intact forearm, and decreased vascular resistance in the forearm previously treated with phenoxylbenzamine and propranolol. These responses were not significantly different from those seen during hypercapnia without acidosis. The effects of hypercapnic acidosis on heart rate, blood pressure and forearm vascular resistance are the result of increases in blood and tissue P_{CO_2} rather than the associated decrease in pH. (Kontos, H. A., Richardson, D. W., and Patterson, J. L., Jr.: *Roles of Hypercapnia and Acidosis in the Vasodilator Response to Hypercapnic Acidosis*, *Amer. J. Physiol.* 215: 1406 (Dec.) 1968.)

ECG IN SUBARACHNOID HEMORRHAGE

Electrocardiographic and serum enzyme changes were studied in 20 patients with subarachnoid hemorrhage. Bradycardia and supraventricular arrhythmias, along with minor alterations in the T wave, ST segment, and QT interval, were seen in 60 per cent of the patients. Pathologic Q waves or other changes diagnostic of myocardial damage were not seen. Serum glutamic oxalacetic transaminase (SGOT) and creatine phosphokinase (CPK) were elevated in 40 per cent of the patients, but the magnitude and the timing of the elevations did not suggest myocardial infarction. Dysfunction of the autonomic nervous system due to irritation or depression of central centers is postulated as the probable mechanism, since prolonged vagal or sympathetic stimulation can produce similar changes in experimental animals. No evidence of myocardial damage was found at necropsy in patients who died. (Hunt, D., McRae, C., and Zapf, P.: *Electrocardiographic and Serum Enzyme Changes in Subarachnoid Hemorrhage*, *Amer. Heart J.* 77: 479 (April) 1969.)

ABSTRACTER'S COMMENT: Since a competent cardiologist can usually differentiate these changes from those due to myocardial infarction, these patients need not be denied the benefits of neurosurgical intervention.