

greater severity in the upper zones. The authors suggest that absence of alpha₁ antitrypsin in the serum cannot prevent parenchymal destruction of lung tissue by bacteria, macrophages, and naturally-occurring proteases from sequestered leukocytes, and areas principally involved include those with the highest ventilation and perfusion, *i.e.*, the lung bases. (Stein, P. D., et al.: *Pathophysiology of the Pulmonary Circulation in Emphysema Associated with Alpha₁ Antitrypsin Deficiency, Circulation* 43: 227-239, 1971.)

Renal Function

RENAL HEMODYNAMICS AND MYOCARDIAL INFARCTION The measurement of cardiac output, renal blood flow (disappearance of ¹³¹I-labelled hippuran) and the urine/plasma osmolality ratio formed the basis for comparison in this study. Patients were divided into three groups: controls without myocardial infarction; patients with acute myocardial infarction and systolic blood pressures greater than 100 mm Hg ("normotensive" group); patients with acute myocardial infarction and systolic blood pressures less than 80 mm Hg ("hypotensive" group). Mean cardiac output, renal blood flow, and urine/plasma osmolality ratios were all lower in the "hypotensive" group and essentially normal in the others. Although in the hypotensive group cardiac output and renal blood flow were both reduced, the renal fraction of cardiac output remained normal. The authors emphasize that monitoring of the urine/plasma osmolality ratio is a valuable method for recognition of the early stages of acute, reversible renal failure. (Hutton, I., et al.: *The Clinical Significance of Renal Hemodynamics in Acute Myocardial Infarction, Lancet* 2: 123-125, 1970.)

RENAL BLOOD FLOW IN CIRRHOSIS

The recent successful homotransplantation of kidneys from cirrhotic patients dying with oliguric renal failure (Koppel, M. H., et al.: *New Eng. J. Med.* 280: 1367, 1969) suggests that the pathogenesis of the "hepatorenal" syndrome has a significant functional component. To clarify this possibility studies of renal function and blood flow distribution were carried out in 15 patients with advanced cirrhosis of the liver. Renal function studies included the cre-

atinine clearance and the ability to excrete a water load. The latter was compared with values obtained in normal subjects maintained on a low-sodium diet (10 mEq). Distribution of renal blood flow was assessed by external scanning of radioactivity following injection of a bolus of ¹³³Xe into the renal artery via a percutaneously-placed femoral arterial catheter. Four patients were oliguric and had extensive encephalopathy (grade IV). In each of the four, despite low urine volumes (400 ml/24 hours) and progressive azotemia, the ability to excrete hyperosmolar urine was maintained (less than 10 mEq sodium per 24 hours). Of seven patients thought to have normal function before the tests were carried out, only two had normal creatinine clearance. However, the remaining five had normal serum creatinine. Study of renal hemodynamics revealed a decrease in renal blood flow, particularly in the portion perfusing the renal cortex (the rapid component of ¹³³Xe washout), that correlated well with the diminution in creatinine clearance. This was also apparent in five nonazotemic patients. Gross vascular abnormalities were found on the renal angiogram, with beading and tortuosity of the interlobar and proximal arcuate arteries. It was impossible to identify vascular filling of the cortical vessel or obtain a distinct cortical nephrogram. On the other hand, postmortem angiography revealed filling of the peripheral vasculature and histologic examination failed to demonstrate structural abnormalities. The authors conclude that vasomotor instability characterizes the renal failure of cirrhosis. The mechanism of the cortical ischemia is unknown, but it does not appear to be secondary to excessive sympathetic activity since renal blood flow was not improved following intravenous infusion of phentolamine. (Epstein, M., et al.: *Renal Failure in the Patient with Cirrhosis, Amer. J. Med.* 49: 175-185, 1970.)

EDITOR'S COMMENT: This study emphasizes the importance of the effects of blood flow distribution on kidney function. Thus, renal failure is potentially possible in the absence of hypotension, transfusion reaction, or direct trauma to the kidney if the autonomic responsiveness of the intrarenal vasculature is abnormal. Measurement of creatinine clearance permits early recognition of this syndrome.