

centration was observed in the one patient with chronic hypoaminoacidemia (No. 5).

Discussion. The average plasma amino acid nitrogen concentration of this group of patients was 4.47 mg per 100 ml if the one patient with chronic hypoaminoacidemia is excluded. This value is in good agreement with the previously reported normal of 4.50 mg per 100 ml by this method.³ The observed decrease in plasma amino acid nitrogen concentration in the patients here reported was much greater than day to day fluctuations which we have observed in individual patients. Such fluctuations have remained within the remarkably narrow limits of $\pm .05$ mg per 100 ml plasma for periods as long as two months if there was no conspicuous change in the patient's condition.

Summary. In 9 children the concentration of amino acid nitrogen in the plasma decreased on the average of 0.38 mg per 100 ml following anesthesia with a further decline averaging 0.46 mg per 100 ml during a surgical procedure. In 5 of the 9, the plasma amino acid concentration was lower 2 hours after operation than at the conclusion of the operative procedure.

The pattern of change of plasma amino acid concentration in one patient with chronic hypoaminoacidemia was similar to those with normal concentrations preoperatively.

Additional studies are being prosecuted to elucidate an explanation of the factors causing the observed changes.

13764

The Portal Venous Pressure in Man.

CARROLL J. BELLIS.* (Introduced by Owen H. Wangensteen.)

From the Department of Surgery, University of Minnesota Hospitals.

Mall^{1, 2} appears to have been the first to record the portal venous pressure in animals under experimental conditions. The later de-

³ Farr, L. E., McCarthy, W. C., and Francis, T., Jr., *Am. J. Med. Sc.*, 1942, **203**, 668.

* Now Captain in U. S. Army Medical Corps at O'Reilly General Hospital, Springfield, Mo.

¹ Mall, F., *Arch. f. Anat. u. Physiol.* (Du Bois-Reymond, *physiol. Abt.* 1892, p. 409).

² Mall, F. P., *Johns Hopkins Hospital Reports*, 1896, **1**, 111.

terminations by Burton-Opitz^{3, 4, 5} were shortly followed by Tigerstedt's⁶ records. These observers used the technically difficult T-cannulation of the portal vein, although this itself probably interfered with the normal pressure under investigation. In the experimental animal, we⁷ have employed cannulation of the divided inferior mesenteric vein, cannulation of a divided splenic vein (as suggested by Bayliss and Starling), and T-cannulation of the portal vein itself. The height of a column of physiologic saline solution above the portal vein sustained in a vertical tube attached to the cannula was taken as the portal pressure. In our animal, the portal pressure was always about 10 cm saline higher than the venous pressure simultaneously determined in the lower extremity. This communication is intended to record a series of portal venous pressures determined at laparotomy in man.

Rousselot⁸ measured the portal venous pressure in 4 patients with Bantis' syndrome of congestive splenomegaly without cirrhosis and observed the presence of portal hypertension—the pressures varying between 330 and 465 mm.

Method. A modification of the method of Griffith, Chamberlain, and Kitchell⁹ was used. The manometer consists essentially of a vertical glass tube with a T-cock at the lower end mounted on a firm base. One horizontal limb of the cock permits filling the manometer with saline to a level above the expected venous pressure. The other limb is attached by sterile rubber tubing to a glass adapter and hypodermic needle which are filled with saline solution. With the abdomen open, the needle is inserted into an omental vein by the surgeon, whereupon the T-cock is turned by the observer to allow the vertical manometer to communicate with the vein. The portal venous pressure is the vertical distance between the top of the sustained saline column and the portal vein. The same method was used to determine ankle venous pressure at the same time.

Results. The results in 17 cases are presented in Table I, from which it may be seen that in every one the portal venous pressure was higher than the ankle venous pressure. The average normal portal

³ Burton-Opitz, R., *Arch. f. d. ges. Physiol.* (Pflüger), 1908, **124**, 469.

⁴ Burton-Opitz, R., *Quart. J. Exp. Physiol.*, 1912, **5**, 329.

⁵ Burton-Opitz, R., *Am. J. Physiol.*, 1914, **36**, 64.

⁶ Tigerstedt, R., *Ergebn. d. Physiol.*, 1920, **18**, 1.

⁷ Bellis, C. J., and Wangensteen, O. H., *Proc. Soc. Exp. Biol. and Med.*, 1939, **41**, 490.

⁸ Rousselot, L. M., *Surgery*, 1940, **8**, 34.

⁹ Griffith, G. C., Chamberlain, C. T., and Kitchell, J. R., *Am. J. Med. Sci.*, 1934, **187**, 371.

TABLE I.
Human Portal and Ankle Venous Pressures Determined Simultaneously at
Laparotomy (cm saline).

Case	Portal venous pressure	Ankle venous pressure	Difference
(a)			
1	18	9	9
2	17	8	9
3	21	10	11
4	16	6	10
5	20	7	13
6	17	9	8
7	14	7	7
8	18	5	13
9	20	11	9
10	17	9	8
11	21	12	9
12	19	6	13
13	22	11	11
14	15	8	7
15	18	7	11
16	17	9	8
			Avg 10
(b)			
17	40	8	32
(portal cirrhosis)			

pressure was 10 cm saline higher than the average normal ankle venous pressure (Table I a). This value is what may be expected in order that the resistance in the portal capillaries may be overcome. In this series, normal portal pressures ranged between 14 and 22 cm saline. Normal ankle venous pressures ranged between 5 and 12 cm saline. In a case of advanced portal cirrhosis with ascites (Table I b), the portal venous pressure was 40 cm saline, and the ankle venous pressure 8 cm saline, a difference of 32 cm saline.

13765 P

Influence of Metrazol, Insulin Hypoglycemia, and Electrically Induced Convulsions on Reestablishment of Inhibited Conditioned Reflexes.

E. GELLHORN,* M. KESSLER AND H. MINATOYA.

From the Departments of Physiology and Psychiatry, University of Illinois, Chicago, Ill.

In a series of studies it was shown that convulsions induced by metrazol and other convulsant agents or by electroshock as well as insulin hypoglycemia are accompanied by an increased excitability

* Aided by a grant from the John and Mary R. Markle Foundation.