

As noted in Table I a significant reduction in arterial pressure occurred in 10 of the 11 dogs. The greatest fall in pressure was found in the animals with the highest initial levels. Although weight loss was evident, no direct quantitative correlation could be established between the amount of weight loss and the extent of fall in blood pressure.

The average blood nonprotein nitrogen was 23.6 mg per 100 cc before the diet and after 8 weeks had decreased to 18 mg per 100 cc. The average total plasma protein

was 6.20 g per 100 cc initially and 6.22 g per 100 cc after 8 weeks.

It appears that the Kempner regime is capable of causing significant lowering of the arterial blood pressure of dogs made hypertensive through the induction of nephrosclerosis. The role of weight loss, salt restriction, and nitrogen balance in this result requires further study.

Summary. In 11 dogs with experimental hypertension the blood pressure fell in every animal following Kempner diets.

15852

Hypoglycemic Effect of Intraspinal Glucose Injection.

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We wish to report our experimental observations on variations in the glucose content of the blood produced by the introduction of glucose into the spinal fluid.

In diabetes the level of glucose in the spinal fluid is subject to considerable variation. Moreover some regions in the brain can be supplied with nutritive substances only through the cerebrospinal fluid. Not only may nutritional influences be exerted but stimulation of the central nervous mechanism may also take place, through variation of the chemical composition of the fluid.

The first series of experiments were performed on dogs. Blood and spinal fluid glucose levels were determined on the fasting animal and 0.1 g glucose was then injected directly into the "cisterna magna" after an equivalent amount of spinal fluid had been removed. The concentration of the injected glucose solution was calculated to increase the glucose content of the fluid to approximately twice the initial values. Blood and spinal fluid sugar levels were determined at frequent intervals by the Hagedorn-Jensen¹ method, since this requires only

0.1 ml of material. In previous control experiments it was established that (1) the blood glucose content of normal dogs showed practically no variation (± 3 —8 mg %); (2) neither the suboccipital tap alone, nor the introduction of isotonic salt solution, influenced the level of the blood sugar; (3) introduction into the spinal space of redistilled water had no effect upon the blood glucose level. This last control test was made in order to eliminate the possibility that the introduction of the glucose solution would produce an effect upon the nervous center by changing the ionic equilibrium.

After the introduction of the glucose solution, there was a steep rise in the level of the spinal fluid glucose followed by a rapid fall to the base level. The blood sugar reached its lowest level in 15 minutes and returned to normal after 2 hours (Table I).

The experiments were repeated in the same way in man. After fasting for 12 hours, 0.2 g of glucose was introduced into the spinal cavity to approximately double the initial level of glucose. Controls similar to those on the dog were repeated on man with the same negative results. Table II shows the results of these experiments.

¹ Hagedorn, H. C., and Jensen, B. N., *Biochem. Z.*, 1923, **137**, 92.

TABLE I.
Blood Sugar Levels Following Intraspinal Injections of Glucose in Dogs.

Dog No.	Blood sugar mg % after							
	0'	5'	10'	15'	30'	60'	90'	120'
1.	89	77	41	34	37	42	78	80
2.	92	86	75	35	66	74	83	90
3.	87	84	46	31	35	71	79	80
4.	91	72	50	29	38	74	83	95
5.	96	81	69	38	33	65	76	93

TABLE II.
Blood Sugar Levels Following Intraspinal Injections of Glucose in Normal Human Subjects.

Case	Blood sugar mg % after							
	0'	5'	10'	15'	30'	60'	90'	120'
P.D.	94	90	76	54	62	68	79	92
P.G.	101	92	79	57	65	73	96	97
T.R.	89	81	71	47	64	72	90	89
C.B.	99	90	88	62	64	77	95	94
O.D.	92	83	75	51	70	68	75	95

The increased level of the spinal fluid glucose depressed the blood sugar values to a minimum of 47-62 mg % within 15 minutes. These values returned to normal in 90-120 minutes. The findings in dog and man, therefore, showed an absolute parallelism.

The curves obtained look very much like those following insulin administration, with a steep fall in the first 15 minutes (the assimilation phase) followed by a gradual rise to normal (restoration phase). Thus we

may infer that the increased glucose content of the cerebrospinal fluid represents a direct chemical stimulation upon the glyco-regulatory nervous centers, and that this is, in turn, followed by a series of functional changes affecting the glucose level in blood.

Summary. The experimental increase of spinal fluid glucose caused rapid changes in blood sugar values, with a severe hypoglycemia.

15853

Phosphorus Metabolism in Active and Inactive Nerves.

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Hecker¹ showed that *in vitro* the release of P of an isolated nerve is significantly increased when the nerve is stimulated electrically, and lately Cicardo² has found the P-content of the cephalic venous blood increased after a period of artificial hyperac-

tivity of the brain *in vivo*. There is some evidence however that this P-release after artificial stimulation might have nothing to do with the normal activity of the nervous matter itself, but rather with an altered metabolism as a consequence of the "unphysiological" excitatory process. This is suggested by the fact that in the metabolism as a whole a remarkable difference between

¹ Hecker, E., *Hoppe Seyler's Z.*, 1923, **129**, 220.

² Cicardo, V. H., *Am. J. Physiol.*, 1946, **145**, 542.