

but that the increased heat production following carbohydrate ingestion is due to the mass action of sugar molecules. On the contrary, amino-acids or the oxy- or keto-acids produced from them act as stimuli upon the cells thereby increasing the heat production.

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The production of duodenal lesions and ulcers in dogs by injections of epinephrin and of gastric lesions and ulcers in rabbits by extirpation of the adrenals.

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In several papers I have pointed out the frequency of polycythemia or polyglobulia in patients suffering with non-bleeding duodenal ulcer. I have also called attention to the presence of eosinopenia in such patients. In gastric ulcer occurs just the reverse anemia and relative eosinophilia.

Of eighteen operatively demonstrated cases of duodenal ulcer, in fifteen polyglobulia was found, while of twelve cases of gastric ulcer, polycythemia was noted only in one.

For details I refer to my article, which will soon appear in the *Journal of the Am. Med. Sc.*

The question arose, what has duodenal ulcer to do with polyglobulia. As several investigators who injected adrenalin in dogs and in men, have found an increase in erythrocytes from 30-70 and 100 per cent (this experimental polyglobulia lasting sometimes about thirty hours) and also a reduction in the number of eosinophiles, the idea has gained access to us, that the initial lesion of duodenal ulcer may be caused by hyperfunction of the adrenals.

As in none of our patients with duodenal ulcer high blood pressure was noted, the assumption was, that in such patients a slight excess of epinephrin may circulate in the blood in quantities not sufficient to cause hypertention, but enough to exert its hormone influence upon the duodenal mucosa.

I have succeeded in producing duodenal lesions and ulcers in eight dogs by subcutaneous and intravenous injections of adrenalin hydrochloride in a period of about one to two weeks daily (with

one or two intermissions). Single doses did not exceed 3 mg. subcutaneously and 2 ½ mg. intravenously.

MACROSCOPICAL CHANGES FOUND IN OTHER ORGANS.

Stomach: ecchymoses in three dogs. Small intestines: marked congestion and hemorrhagic patches in two. Large intestines: slight hyperaemia in one. The appendix was atrophic and constricted in one. Lungs: Congestion of lower left lobe in one. Head of pancreas was found to be congested in two. Spleen was firm to the touch in one. Thyroidea, adrenals and thymus did not appear to be enlarged in any of the dogs.

The findings of duodenal lesions in each and in every dog could not be explained by mere coincidence.

In two dogs, used as controls, who were injected for about one week with thyroid extract, no lesions were found in the duodenum, but only in the stomach: erosion and ulcerations.

In one dog from whom the right lobe of the thyroid was extirpated and killed seven days later, two distinct soft ulcers were found at the first portion of the duodenum and no lesions were seen in the stomach.

I have also succeeded in producing gastric erosions and ulcers in rabbits by extirpation of one or both suprarenals. Autopsy was performed not before the seventh day after removal of the glands and not later than on the thirteenth except in two, who died.

FINDINGS IN FIVE RABBITS AFTER EXTIRPATION OF LEFT ADRENAL.

Erosions and ulcers at the pylorus in three, erosion at the pylorus and ulcer in first portion of duodenum in one, and no lesions in one. In the case of double ulcer the right adrenal was found to be nearly twice as large as normally; except new glandular tissue appeared at the site of the extirpated adrenal. In the case with negative findings fragments of new tissue were seen at the site of the extirpated gland and the right adrenal was found to be somewhat larger.

FINDINGS AFTER EXTIRPATION OF RIGHT ADRENAL.

Erosions at the lesser curvature, proximal to the cardia in three rabbits, a round ulcer at the posterior wall of the stomach, near

to cardia in one. The most pronounced ulcers, reaching down to the serosa, were obtained at the fundus of the tenth rabbit after extirpation of 2/3 of the right adrenal and five days later of the left.

In fourteen normal rabbits no lesions in the stomach or in the duodenum were seen.

Extirpation of left adrenal and right lobe of thyroid in one rabbit and right adrenal and left lobe of thyroid in another (in one sitting). Stomach and duodenum normal.

It is said that gastric lesions may be present in rabbits from infection. The latter two were the only ones who became infected and yet no lesions in the stomach were seen.

A full report of our work will be published in the near future.

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Mosaics and gynandromorphs in *Drosophila*.

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Quite a number of gynandromorphs and mosaics have appeared in our experiments with the mutant stocks of *Drosophila*. In some of these the male side or part is maternal, and in others paternal, and in one case both paternal and maternal. For the first type Boveri's hypothesis of partial fertilization will cover the result, for the second my own hypothesis of polysperm will explain the facts. In the third case the result must be due to mitotic dislocation at some early cleavage stage.

In order to test these three hypotheses, I crossed a female homozygous for the sex-linked characters, yellow body color and