known as well as the organic responses to emotional states of psychic origin. Apparently these centers under stimulation can so weaken the gastric structure that it becomes susceptible to digestion by its own juices. Thus an explanation is offered of acute gastric ulcer as a constitutional disease in which the origin and recurrence of symptoms is definitely linked with psychic disturbances."

In general, it seems fair to state, despite these observations, that the mechanism of peptic ulcer production through psychic pathways, still awaits elucidation.

SUMMARY AND CONCLUSIONS

A psychiatric examination of 33 young adult males with duodenal or gastric ulcer has been carried out. Space permits only the presentation of 4 illustrative cases in detail. The entire group revealed characteristic psychic backgrounds. These patients are suffering from chronic frustration and inward direction of repressed, strong emotional stimuli with strong masochistic and sadistic tendencies. This chronic state of inward tension or drive bears a close relation to the incidence and recurrence of peptic ulcer. While much further work is necessary before one can draw a final conclusion, nevertheless, a review of the observations of others plus our own experience impresses one with the strong probability that peptic ulcer is a psychosomatic disease.

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The Nervous Stomach

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POSSIBLY the majority of patients complaining of their stomachs are suffering from a functional rather than an organic disease. Fullness and upper abdominal distress after meals, belching and failure to obtain relief from alkalis suggest a diagnosis of "gastric neurosis," especially when these symptoms are associated with nervousness, constipation, insomnia and loss of energy. We must carefully rule out gastritis, peptic ulcer, duodenitis, cholecystitis, cancer, appendicitis, and such general conditions as anemia, leukemia, hepatic cirrhosis and circulatory failure. Food-relief and soda-relief are highly suggestive of ulcer and such cases must submit to radiological examination. It is questionable if gastritis can be diagnosed without gastroscopy.

The author is slow to make a diagnosis of cholecystitis and restricts cholecystectomy to those cases in which stone is present. At the Marine Medical Clinic only one-tenth of one per cent of all admissions have been subjected to cholecystectomy.

Gastric cancer may be elusive in its early stages and X-ray examination should be insisted upon in all cases over forty years of age, who complain of stomach distress.

Gastric neurosis may be the only form of neurosis which the patient presents. Failure to receive help from other physicians often makes him a difficult patient to handle. A carefully taken history and a sympathetic discussion of his affairs may reveal that he is intensely worried, or overworked or the victim of some social injustice, or a perfectly frustrated person. Finances and in-laws are, in my experience, more common causes of worry than elaborate Freudian complexes of any sort.

Fluoroscopically, the stomach may be seen to be subject to more or less intense spasm, not only at the pylorus but throughout the entire organ. The "spool" type of spasm is not infrequent, especially in thin women. In a few cases, where extreme pain is present, the stomach silhouette may be almost obliterated temporarily by a massive gastric spasm. The tone of the organ usually is good, and atonic stomachs associated with pain are rare. The resemblance of spastic stomach to spastic colon is obvious, and the two may co-exist, but the latter may be assumed to cause lower rather than upper abdominal distress.

Chronic appendicitis (if there *is* such an entity) may best be recognized by its acute or subacute exacerbations, exhibiting the classical features, and these signs are of greater value in diagnosis than roentgenological studies.

Once organic disease has been confidently ruled out, and a diagnosis of nervous stomach has been made, the patient himself must be sympathetically understood and treatment directed to the entire socio-psychological elements in his particular case. In this valuable work, good sense and encouragement are, in ordinary cases, more needed than technical psychoanalysis. If a diet is prescribed, one should avoid too great restriction. Temporary limitation of starches and roughage may be of value. In adipose individuals, caloric intake needs to be lessened and a regimen outlined for weight reduction. In ptotic individuals, the familiar "long thins," added nourishment is needed. When constipation is present, a daily saline enema is not only harmless but helpful and produces a good reflex effect on the stomach. If achylia is present, dilute hydrochloric acid, in water or in milk, with or following meals, may be used. However, the medicinal mainstay of treatment of these nervous stomachs is

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sedative and belladonna. A favorite prescription of the author is as follows:

℞ phenobarbital gr. ½
Atropine sulphate gr. 1/200
Misce fiat cap. Sig:— one after each meal.

Finally, any of the bulk-producing laxatives may be tried if necessary.

The diagnosis of "nervous stomach" should depend upon a highly scientific elimination of organic disease in the upper abdomen. The treatment, however, is an art rather than a science and success is dependent, largely, on understanding the mental problems of the individual, and one's power of mental suggestion and encouragement.

Insulin Reaction and the Cerebral Damage that may Occur in Diabetes*

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INSULIN, when first introduced, was used with caution and the dangers of hypoglycemia from overdosage were emphasized. The advent of Sakel's insulin shock therapy in the psychiatric states has resulted in voluminous literature on hypoglycemia. Much of this deals with the therapy of the various psychoses. The significance of insulin reaction was minimized, and the safeguards which had been so effective were somewhat slighted. There is, however, increasing study of the mechanism of insulin reaction and the possible pathologic changes, particularly with reference to the central nervous system, which may result from prolonged hypoglycemia. And there has been recent reemphasis upon the catastrophic end result of severe insulin hypoglycemia in diabetic patients. The case reported here is an example of this danger.

REPORT OF CASE

S. S. Hospital Number 280182, white female, 13 years old. The patient, a thirteen year-old white school girl was admitted to the Milwaukee County General Hospital at 9:00 a. m. on March 8, 1941, in coma.

The *past history* revealed that the patient had had all the usual childhood diseases. At the age of four she had been under observation for six months for tuberculosis, but was discharged as non-infected. At the age of eight she was struck by an automobile, incurring a cerebral concussion which left her unconscious for 24 hours. There were no apparent residual injuries from this accident.

Her educational development had been normal. Prior to admission she was in the seventh grade, and had maintained an excellent scholastic record. There were no obvious personality defects.

The *family history* was negative except for the presence of diabetes in a paternal uncle.

The *present illness* began one month prior to admission, when she developed diabetes. The symptoms culminated in diabetic coma, and she had been hospitalized and treated for this complication in another institution from February 11 to February 17, 1941. Upon release her diabetes was controlled on diet and Protamine Zinc Insulin, 15 units in the morning and 15 units at night. This dosage was later increased to 25-0-25. For two days prior to admission the child complained of continual hunger.

On March 8, the morning of admission, she awoke about 4:30 a. m. sweating, nervous, and confused. Her mother, upon the advice of her family physician, gave her the regular dose of protamine insulin (25 units) at this time. At 6:30 a. m. she no longer responded. She was irritable, tossing about and screaming, and there were choreiform movements of the face and extremities. Shortly after this, there was an involuntary micturition and defecation. She then developed violent convulsions and was restrained in bed with difficulty. It was in this state that she entered the hospital—four and one-half hours after the onset of the hypoglycemic reaction.

Entrance examination revealed a tall, thin, pallid girl of 13 years. She was comatose. There were restless choreiform and athetoid movements of the face and extremities. The arms and legs were quite spastic. The temperature was 101.0° F., pulse 104°, respirations 20, and blood pressure 130/70.

The pupils were equal, dilated, and reacted to light. There were incoordinate movements of the eyes. The fundi were normal. No abnormalities were found upon examination of the ears, nose, mouth or neck. There was a soft systolic murmur at the pulmonic area of the heart. The lungs, abdomen and external genitalia were negative. The extremities were spastic.

Urinalysis was negative for sugar, acetone, and diacetic acid. The diagnosis of hypoglycemic shock was made, and therapy instituted immediately. Twenty-five cc. of 50 per cent glucose were given after completion of the admission examination, and an additional 40 cc. of 50 per cent glucose were administered within the ensuing forty-five minutes. The active convulsive movements ceased after the second dose, but the patient remained comatose, and there were still irregular athetoid movements of the extremities.

The further therapy instituted, and the follow-up studies of the blood and urine sugars are summarized in Table I. It will be noted that the initial blood sugar value, taken after the administration of 45 gm. of glucose, was only 96 mgm. per cent. On the second hospital day it was over 200 mgm. per cent, and thereafter was maintained at near normal levels. The carbon-dioxide combining power of the blood remained within normal limits throughout. Sugar re-appeared in the urine on the second day and remained intermittently until the sixth day, when the patient was stabilized on insulin and diet.

Despite the adequate control of the initial hypoglycemia and the regulation of the diabetes, however, the patient failed to respond. She remained comatose until the fourth hospital day, when she reacted to verbal orders and called for her mother. There was no other attempt at speech.

On the fifth and sixth day the patient recognized members of her family, responded to simple commands, and was able to take a liquid diet. However, she was emotion-

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