

Fortunately, both in maladies associated with skeletal overgrowth or dwarfism and in those accompanied by excessive adiposity with genital derangement, pituitary hypertrophies, tumors or cysts, have been found often enough to justify us in attributing similar clinical pictures to a corresponding secretory change in the absence of a local neoplasm.

In varying grades the type is doubtless a common one, more or less familiar to all. One need but recall the fat boy depicted in "The Pickwick Papers," whose employment with Mr. Wardle consisted in alternate eating and sleeping. The combination of drowsiness, inertia, and an excessive appetite is often merely an expression of metabolic inactivity due to ductless gland insufficiencies.

CONCLUSION. The view is advanced that skeletal overgrowth, possibly combined with certain cutaneous changes and hypertrichosis, is an indication of anterior lobe hyperplasia. On the other hand, certain types of adiposity with an increased assimilation limit for carbohydrates, often with dry skin, subnormal temperature and pulse, are characteristic of the metabolic disturbances from posterior lobe insufficiencies. Hypotrichosis and sexual dystrophy are common accompaniments.

Assuming the combination of these factors, certain not unfamiliar clinical syndromes, in which overgrowth is associated with adipogenital dystrophy, can be explained. They differ from the accepted syndrome of Fröhlich not only in the absence of an hypophysial tumor with sellar enlargement, but also in their opposed skeletal features.

These physical states, in brief, are interpreted as the expression of an anterior lobe hyperplasia combined either with posterior lobe hypoplasia or with what is in effect the same thing, stasis of posterior lobe secretion.

GASTRIC DISTURBANCES IN TABES DORSALIS.

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DURING the past year the writer has observed five patients who presented themselves because of gastric disturbance, in whom this ultimately proved to be but one of the manifestations of tabes dorsalis. None of these patients had previously been made aware of the real nature of their disease, though all had been suffering for years. Two had been operated upon for supposed gastric ulcer, without the slightest relief of their symptoms; and a third was also subjected to surgery, by the advice of the writer, before

the fact was discovered that no organic disease of the stomach existed and the real situation was disclosed. All these facts seem to indicate that the gastric manifestations of tabes are not always recognized as promptly as they might be, and that perhaps more cases of "stomach trouble" are in fact spinal in origin than is generally realized.

The first case to be reported is a particularly remarkable one because of the unusual association of hematemesis with the gastric crises.

CASE I.—T. Y., a Japanese, aged thirty-four years, was first seen in September, 1911, complaining of stomach trouble.

History: For seven years he had had recurring attacks of abdominal pain, with vomiting. These came at irregular intervals. Between times he felt perfectly well. During 1910 he had two severe attacks. In 1911 the last one came about five weeks before we saw him first, and he had then been in the hospital for three weeks. Previously to that he had been at work and feeling well.

The pain was always felt in the pit of the stomach; did not radiate from there; was very severe; in character was described as a "shooting pain;" came on without reference to food taken; frequently began in the night, arousing him from sleep; lasted for several days without relief. Vomiting was constant while the pain lasted, but did not give relief. Taking food made no difference one way or the other, but no food was retained or desired. With his last attack he had vomited blood, but never before.

Physical Examination: The patient was a well nourished man, apparently well. No abnormality was found in heart, lungs, liver, or spleen. The abdomen showed slightly greater fulness and rigidity in the left hypochondrium than in the right, but no tenderness over the stomach; no palpable mass; no succussion splash; no peristaltic wave; no evidence of dilatation or of pyloric obstruction. The patient pointed always to the lower end of the ensiform as the site of his pain.

Gastric Analysis: One hour after the Ewald test meal four ounces of contents were removed, not well triturated, showing a little blood, much thick, ropy mucus, a few chunks of meat, and considerable butter, retained from the previous meal six hours before. Total acidity, 48; free HCl, 16; combined HCl, 16; organic acids and acid salts, 16.

TREATMENT. The patient was advised as to his diet, excluding all coarse and irritating foods, but was given no medicine. He remained perfectly well for two months following.

Recurrence: On November 29 he returned to Lanc Hospital, because the previous afternoon he began suddenly and without warning to have violent pain in his stomach, and to vomit blood. In spite of withholding all food by mouth, applying an ice-bag over the stomach, and giving morphine hypodermically, he con-

tinued during November 29 and 30 to have violent pain and to vomit repeatedly, the vomitus being a brownish, bloody fluid, containing numerous shreds and flecks of brownish or reddish material which responded to all tests for blood. After two days the vomiting and pain suddenly ceased, and he was able to take food.

OPERATION. Convinced after witnessing this attack that there must be some serious organic disease of the stomach, most probably ulcer, we advised exploratory laparotomy. This was done by Dr. Stanley Stillman on December 9, but no abnormality of any kind was found in stomach, duodenum, gall-bladder, liver, or appendix, and the abdomen was closed without anything done but exploration. Except for another violent attack of pain and vomiting, with the same character of bloody vomitus as before, shortly following the operation, the convalescence was uneventful.

Further Recurrence: On April 16, 1912, the patient was again brought to Lane Hospital from his home in the country. Following his operation he remained well and gained in weight. On the evening of April 15 he began again to have a violent paroxysm of pain and vomiting, vomited all night, and the same bloody material as before. Seen at 9 A.M. on April 16, he was retching violently, and had brought up in repeated small amounts about eight ounces of a dark brownish material, with much mucus, plainly bloody. He continued to have pain and hematemesis for three days, when the attack abruptly ceased.

Spinal Fluid: On April 19, 5 c.c. of spinal fluid were obtained by lumbar puncture. This showed a faint opalescence on boiling; positive Nonne reaction; negative Noguchi; sixty lymphocytes in 1 c.mm., and no polymorphonuclears; a positive Wassermann reaction in all dilutions.

Evidence of Tabes. Further physical examination now elicited the following facts:

Pupils: The right was regular in outline, the left was slightly irregular, and both reacted incompletely and sluggishly to light.

Abdominal reflex was present and lively on both sides, likewise the cremasteric.

The plantar, achilles, and patellar reflexes were completely missing on both sides.

Sensation was diminished over the legs from the knees down to heat and cold and to pain, but not to touch; the patient swayed when standing with eyes closed, and had to be supported or he would have fallen; he walked clumsily and stumbled, but his gait was not definitely ataxic.

Subsequent History: On April 29 the patient was given 0.6 gram of salvarsan intravenously, and a prescription containing bichloride of mercury and iodide of potassium for regular use by mouth. In spite of this treatment he had another attack in May

and another in June; he then returned to Japan, and we have had no further report of his condition.

A case similar to this forms the subject of one of Charcot's lectures in his *Leçons du Mardi*.¹ He speaks of hematemesis, "vomissements noirs," as a rare feature in gastric crises, and says that besides this case of the patient he is presenting he knew of but one other, previously reported by Vulpian. But that was in 1889. Oppenheim,² in the latest edition of his text-book on nervous diseases, mentions hematemesis as a rare occurrence in gastric crises, but refers to observations of it by Vulpian, Charcot, von Noorden, Eckert, Rubin, Neuman himself, and Von Jappa³ reports a case of gastric crises associated with hematemesis during one recent attack, but not with any other previous, though they had recurred at intervals for six years. At autopsy this patient was found to have not only characteristic spinal changes, but in the stomach the scar of a gastric ulcer, with an eroded vessel. Von Jappa questions whether in such a case the gastric ulcer is simple accidental coincidence or is a mucous membrane defect secondary to trophic disturbance from tabes. He agrees that it is possible to have pure parenchymatous bleeding in gastric crises, without ulcer, and such was the condition in the case of the Japanese just reported, for the stomach was examined carefully at the operation and no ulcer was found. Ranzier and Roger⁴ have also recorded the history of a case of severe gastric crises, ultimately accompanied by hematemesis, and closely resembling gastric ulcer. Probably as more such cases are put on record, and attention is called to the possibility, the correct interpretation will more frequently be made previous to laparotomy.

CASE II.—A Scoteliman, aged forty-one years, was first seen in the medical ward of Lane Hospital in October, 1911. He complained of attacks of pain in the pit of the stomach, with nausea and vomiting, recurring for two and a half years past; though he had had "stomach trouble"—sour eructations and belching after eating—for ten or twelve years before that. His severe attacks were frequent, with only a few days intermission, and they lasted only for one day or sometimes for three or four. They seemed to have no relation to the taking of food. They came on suddenly, with sharp, cutting pain in the pit of the stomach, nausea, and repeated vomiting. He had never vomited any blood nor passed any by bowel. Three months before coming to the hospital he had had his abdomen opened, but was told that nothing was found, and his attacks persisted afterward as before.

¹ Charcot, *Oeuvres Complètes*, ii, 331.

² Fünfte Auflage, S. 174.

³ Ueber Nüchterbrechen bei gastrischen Krisen, Inaug. Dissert., Berlin, 1911.

⁴ Crises gastriques subintrantes avec hématemesis au cours d'un tabes larvée, Montpellier Méd., 1911, No. 41.

This patient was found³ to have inequality of his pupils, the right being markedly larger than the left; neither pupil reacted to light, and the left only slightly to accommodation, the right not at all. The left Achilles tendon reflex was absent, but the right was lively; the corneal reflex was absent in both eyes; but all other superficial and deep reflexes were normal. Hyperesthesia to heat and cold, with hypoaesthesia to tactile irritation, was found over both lower limbs from knees to hips, and continuing over the trunk posteriorly as high as the angles of the scapulæ, but extending anteriorly only as far forward as the nipple line on each side, leaving the abdominal wall above Poupart's ligaments apparently normal in its sensibility.

There was a positive Wassermann reaction in the blood and in the spinal fluid, and the latter showed 20 cells per cubic millimeter, all lymphocytes. The stomach showed hypersecretion not only after the Ewald meal but also in the fasting state, in the early morning.

This patient twice received salvarsan intravenously, with the result that his gastric crises occurred much farther apart afterward, and were briefer in duration, but they did not entirely cease.

CASE III.—A Japanese, aged twenty-eight years, entered the medical ward at Lane Hospital in January, 1912, complaining of stomach trouble. During the year and a half previous he had had four or five similar attacks. The present attack began four weeks before. The characteristic feature of this case was vomiting; at the outset he vomited for four or five days every fifteen minutes without stopping, then for two days he did not vomit at all; since then he had vomited several days at a time quite frequently, with intervals of several days with none. He also complained of pain, burning in character, up and down the anterior surface of the trunk, from throat to navel, present continuously for five weeks. No previous attack had ever lasted over two weeks.

This patient showed loss of both patellar and both Achilles reflexes, but no other evidences of tabes. His blood and spinal fluid both showed positive Wassermann reaction, and the spinal fluid contained 26 lymphocytes per cubic millimeter.

After salvarsan intravenously his condition was much improved, and his vomiting and pain gradually ceased, but his subsequent course could not be followed.

Duration of Gastric Crises. The two cases just described bring up the question of possible duration and frequency of gastric crises in tabes. The ordinary course is that noted in Case I. Attacks come at intervals of two or three months and last for three days to a week, repeating themselves throughout three to

³ In the neurological examination of this and of the subsequent cases I have had the cooperation of Dr. W. F. Schaller, instructor in neurology in Stanford University, Medical Department.

six years. But Charcot, in his description of the possible variations from type, mentions gastric crises that occur with great frequency, even daily, but lasting for only four or five hours; while, on the other hand, the length of the crisis, in place of three, four, or five days, as in the typical condition, may be extended to fifteen or twenty days, a month, or even more, while at the same time the intervals shorten. Thus the gastric disturbances of tabes may even establish themselves as more or less of a permanency, without cessation or intermission, for a period of many months.

CASE IV.—An Irish laborer, aged forty-seven years, was first seen in October, 1908, complaining of stomach trouble. For six or seven years before he had had recurring attacks of the same sort, at first with several months' interval, but gradually growing more frequent. They were characterized by nausea, belching, vomiting, but no intense pain, only a gnawing, distressed feeling. Such attacks always lasted only a week or two, and in the interval he always felt well. During an attack all food increased his distress, and he feared to eat. Vomiting came on because of the discomfort, and usually relieved it. He had never vomited any blood. The present attack, that brought him for advice, was the most severe he had ever had. His stomach was found dilated, but there was no palpable tumor over it and no tenderness. The contents gave a total acidity of 100 and free HCl 60. The case was only seen for diagnosis at that time, and was not understood, though ulcer was suspected.

The man was not seen again until August, 1912, when he returned for advice about pains in his chest. Subsequent to his previous visit he had no further attack of his stomach trouble for two years, and then only a mild recurrence, and after that no more at all. In February, 1912, he began to have dull pain in his lower limbs, from his knees down, like rheumatism, but could stand or walk without increase of pain. Suddenly the pain left his lower limbs and went up into his abdomen and back; it was felt around the trunk, particularly over the abdomen, but less severely in the back; the abdomen was tender to touch, he said, in the region where he felt his pain. Since this pain began he had lost twenty to thirty pounds in weight, and had become so weak he could hardly move around. Examination showed that over the back, between the sixth and tenth thoracic vertebrae, he had a definite area of hyperesthesia to touch or pressure, but not to pin-prick or heat or cold; evidently due to an inflammation of meninges and nerve roots in his lower dorsal region. In his lower limbs from feet to knees he also showed a disturbance of sensation, inability to distinguish heat from cold, and pin-head from pin-point. The right pupil was smaller than the left, fixed, and did not react to light; the left reacted to light, but sluggishly. There was no loss of plantar or patellar reflexes, but the Acllilles was less on the right

than on the left side. The blood and the spinal fluid both gave a positive Wassermann reaction, while the spinal fluid showed also a positive Nonne and a positive Noguchi reaction, and 20 cells to the cubic millimeter.

This case brings out several points long ago emphasized by Chareot and since by others, but apparently not yet thoroughly appreciated in diagnostic work. (1) The gastric crises of tabes occur most often in that early period of the malady before motor ataxia has yet appeared, the pre-ataxic period. This phase may continue for years before locomotor troubles show themselves, and during this time the crises may be the sole manifestation of the spinal disease. This absence of other recognized symptoms of tabes in association with the gastric attacks no doubt often misleads the physician and makes him fail to understand the real nature of the condition. But even during this pre-ataxic stage there may be minor signs of whose existence the patient is totally unaware, such as slight inequality of the pupils or a fixed pupil that does not react to light, or an absent reflex in knee or Achilles tendon, or an area of disturbed cutaneous sensation. Lumbar puncture and spinal fluid also now afford valuable aids to diagnosis, even in the pre-ataxic stage. (2) As the other symptoms of locomotor ataxia appear and progress, the gastric crises are likely to cease spontaneously, and after having suffered from them for years, the patient may finally be freed from them entirely, as the evidences of ataxia and motor incoördination appear upon the scene. (3) There are incomplete and atypical gastric crises, "formes frustes," as Chareot called them, of which this case forms an example, for the usual violent pain was lacking from his attacks. In another case it may be the vomiting that is lacking, while pain in the epigastrium is acute and prostrating. Other possible deviations from the usual type, as regards frequency of repetition of the attacks and as regards duration, have been mentioned in commenting on Cases II and III.

CASE V.—K. M., a Japanese, was first seen in July 1912, complaining of stomach trouble. About seven years before he commenced to have attacks of severe pain in the stomach, but without vomiting. Six years before he had been operated upon in the country, the abdomen opened, and the stomach explored. He did not know what was found, but his attacks continued after the operation just the same. Later on these attacks consisted of vomiting and diarrhea as well as of pain. Such attacks lasted for three or four days, he said, and recurred irregularly every few months. The one observed in July, 1912, included very violent epigastric pain, repeated and violent retching, inability to retain any nourishment, many bowel movements each day, apparently without cramps, considerable prostration; the whole illness lasted four days; he said there had been none before for five months. He

recovered from it quite suddenly, and after it ceased was at once hungry and able to eat. The stomach was not dilated nor tender nor abnormal in contour. The contents showed no free or combined HCl, and a total acidity of but 16. The right patellar reflex was much less active than the left; the left Achilles reflex was absent entirely; there was no abnormality of the pupils. The spinal fluid showed 14 cells per cubic millimeter and a positive Wassermann reaction.

It seems remarkable that 3 out of these 5 patients observed have been Japanese. They constitute a small proportion of our material in San Francisco, and the frequency in this race of gastric crises as well as of other manifestations of tabes and of syphilis of the nervous system makes us suspect that they must be inadequately treated in their own country at the time of their initial infection.

SUMMARY. The recognition that certain gastric disturbances are really due to tabes is never difficult if one is alert to the possibility. There is no fixed unchangeable rule about the nature of these disturbances, or about their duration, or their frequency of recurrence, to make their diagnosis easy. They are not accompanied by the evidences of organic disease in the stomach that one expects to find; they recur in spite of treatment of all kinds directed to the stomach, even in spite of laparotomy; they usually appear abruptly, without reason, and cease suddenly regardless of treatment, leaving the patient perfectly free from gastric disturbance in the intervals. On the other hand, no manifestations of "locomotor ataxia" may be present for years during which the stomach upsets continue, and the patient may make none of the complaints that one expects to hear when spinal disease exists. The proof of the connection between the gastric disturbance and the spinal lesion, therefore, must often depend upon the discovery of signs of tabes of which the patient is unaware—such as faulty reflexes and cutaneous sensibility, and changes in the spinal fluid obtained by lumbar puncture; while the demonstration that active syphilis exists, by the Wassermann reaction in the blood and spinal fluid or even in the latter alone, adds the last link to the chain.

THE LYMPHOCYTOSIS OF INFECTION.

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THE great majority of infectious diseases are accompanied during their acute stages by increase in the polynuclear leukocytes. A few, like typhoid and malaria, show no marked change