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NERVOUS SYMPTOMS CAUSED BY
FUNCTIONAL GASTRO-INTESTINAL DISORDERS.

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THE following clinical history is, in many respects, a good illustration of a group of cases characterized by gastro-intestinal disturbance and marked nervous symptoms. It tends to show in an interesting manner how imperfect digestion may, in a neurotic patient, cause most persistent and alarming manifestations. As will be seen, these symptoms and nervous phenomena may be very numerous and, in aggravated cases, may display themselves throughout the entire system. This is possible because of the intricate relations and the mysterious sympathies existing between the processes of organic life, the nervous system, and the mind. Hence it is not uncommon to meet with cases in which a large number of nervous symptoms, as well as a perverted state of the emotions and mind, are chiefly due to irritation by improper foods and the effects of gastro-intestinal disease. These cases are most common among city business men who, by improper food, irregular and hurried eating, and intense and prolonged mental strain, bring on



nervous excitability, indigestion, and subsequent exhaustion of vital power.

These preliminary remarks will be largely confirmed by the history of a case in which functional gastro-intestinal disorder and many forms of reflex nervous irritation prevailed for a long time, and were finally brought under control by a proper regulation of diet and treatment of the organs of digestion.

Mr. C., aged forty-six, of a bilious nervous temperament, of good habits of life, and a lawyer by profession. His father suffered from catarrh of the stomach and bowels for many years, and then died of consumption. His mother is still living, about sixty-five years of age, and in fair health. The patient himself was healthy during childhood, but subject to pain in the limbs. When about fifteen years old he had diphtheria, which was followed by measles, and then very poor health, emaciation, and debility. He gradually recovered and worked on the farm, taught school, and attended college. About this period he experienced his first occasional suffering from indigestion, which seemed to be due to overeating or improper food. When twenty-two years of age he went into the army, and there suffered still more from indigestion, characterized by intestinal flatulence and pain. Two years later, while still in the army, he had typhoid pneumonia, which left him in poor health and with great weakness of the nervous system for nearly five months. Within six months he had another attack of typhoid pneumonia, and it was six months more before he completely recovered. These attacks left him with a greatly enlarged liver, and it was nearly three years before the organ returned to its normal size. After the war he returned to civil life, his health improved very much, he engaged in the study of the law, and subsequently became a lecturer on that subject. After two years of hard work his nervous system broke down, and he suffered from general weakness, loss of appetite, and indigestion. Hoping that a change of climate would be beneficial, he moved to Cheyenne, Wyoming, and engaged in the practice of law. From

1867 to 1875 he had very good health, excepting for some indigestion and occasional temporary nervous "breakdowns" from overwork. During this time he was subject to frequent colds and bronchitis, which made him sick for a few days, and finally left him with naso-pharyngeal catarrh. In the year 1876 he was elected to Congress, and the circumstances incident thereto proved to be a great strain upon his nervous system. Indigestion, flatulence, and pain became more marked, and he suffered greatly from insomnia and various nervous manifestations. In 1877 he experienced a general breaking-down, characterized by indigestion, prostration, extreme insomnia, nervous irritability, inability to concentrate his mind, and pain and burning in the limbs. These symptoms continued to grow worse even under a more regulated life and medical treatment. Subsequently he took a trip to Europe, and this afforded temporary improvement. Returning to Washington, he soon grew worse, suffered greatly from indigestion, insomnia, pain in his limbs, and a sense of burning or heat in his feet, and finally became unable to attend to his official duties. At the expiration of his term in Congress he went to Hot Springs, Arkansas, where he remained two months and was again temporarily benefited. From there he returned to Cheyenne and resumed his professional work, but soon broke down, suffering from the same conditions and symptoms, but in a still more aggravated form. Hoping to find relief in rest and change, he traveled in California, and subsequently made a second trip to Europe. In addition to travel, he passed months at a time under systematic treatment at the hands of celebrated specialists for the treatment of nervous diseases; but during the last four years there has been but little, if any, cessation from suffering in his bowels and the manifold nervous conditions repeatedly referred to. When he came under treatment he had a tired, worn, and haggard look. He was suffering from aggravated indigestion, great distension and pain in his bowels, burning and lancinating pain in his legs and feet, and most persistent insomnia. As a rule, he was unable to sleep more than from two to four hours out of twenty-four unless under the influence of a hypnotic. Indeed, he had been obliged to resort to almost every form of sedative, including

bromides, chloral, sulphonal, and morphine, in order to obtain even a moderate amount of sleep.

In concluding the history of this interesting case it is worth while to note again that, in the first place, there were the usual symptoms of indigestion beginning in childhood and lasting more or less for thirty years. From first to last the patient suffered from distress after taking food, acidity, flatulence, pain, great abdominal disturbance, grinding sensations in the stomach and bowels, constipation, and all the lesser symptoms of indigestion.

In the second place, going hand in hand with the above-described condition, there was a history of "leg-ache" in boyhood, gradually developing into neuralgic pains in the head, persistent insomnia, excessive nervous irritability, inability to concentrate the mind, numbness and tingling of the limbs, lancinating pains in the limbs, and localized burning sensations in the ankles and feet. From first to last he had been conscious of indigestion with its associated symptoms and miseries, and added thereto had been almost every form of suffering due to reflex irritation of the nerve filaments of the gastro-intestinal tract. All of these conditions and symptoms steadily grew worse despite medical treatment and travel, until the patient became a constant sufferer and utterly unfitted for business or the enjoyment of life.

In these mixed cases of indigestion accompanied by marked nervous symptoms it is frequently difficult to decide just what condition one has to deal with. Indeed, it is often a problem calculated to perplex a careful diagnostician and make him appreciate more than ever the mysteries and complications of disease. That doubts should prevail and mistakes should occur is not strange when one considers what a host of symptoms may result from intestinal disorders and from an irritated, excited, impaired, and perverted state of the nervous system. In the majority of such instances, where the above-named conditions are mixed together, the diagnosis is made in favor of some nervous

disorder and styled "nervous dyspepsia," "nervous irritation," or "nervous exhaustion." In fact, the prominence, urgency, and distressing character of the nervous symptoms are allowed to overshadow those that really point to the underlying cause. This was well illustrated in the case under consideration, for the nervous symptoms were so prominent and persistent that they misled both the patient and his many different physicians. One of the latter, a neurologist of national repute, treated him for many months for nervous exhaustion and nervous irritability, never giving more than passing attention to the symptoms of persistent functional disorders of digestion. These latter were called "nervous dyspepsia," and the assurance was given that they would pass away with the return of nerve force.

These facts hint at the difficulties attending this line of cases, and plainly indicate the paramount importance of first establishing an accurate diagnosis. This can be done in most instances by a careful analysis of the history of the case by following out certain general principles, and by a frequent study of the products of the system. The utility of such procedure will be seen as we advance in our study of the case under consideration.

1. The history in this case revealed the fact that indigestion had prevailed more or less for many years—indeed, from boyhood. It was the primary functional disturbance, and had always preceded or existed in concurrence with nervous manifestations. Latterly it had become so marked that there were persistent acidity, flatulent disturbance, gripping pains, and undefinable abdominal distress. These facts and symptoms were, to say the least, highly suggestive and merited thorough investigation. Moreover, the patient was of a nervous or neurotic family and had a highly sensitive nervous organization. He was therefore, by virtue of hereditary tendency, predisposed to suffer from either direct

or reflex irritation. All that was needed was an abnormal state of the secretions, improper food, acidity, and fermentation to irritate the nerve filaments of the stomach and bowels, and to cause pain and general nervous disturbance. Besides, to these inherent tendencies he had added that irritability frequently caused by hard work, constant anxiety, a great amount of care, professional strife, and business reverses. In such manner, predisposing and exciting causes prevailed which would, beyond doubt, point to the probability that the seat of his troubles was in the gastro-intestinal tract.

2. In the second place, it is a general principle that a constant cause underlies a constant effect. It was rational to believe that constant disorder of digestion, accompanied by continual abdominal pains, burning sensations and lancinating pains in the legs, irritability of the nervous system, mental confusion, and intolerable wakefulness had a constant cause somewhere. It was equally rational to assign the cause to improper food and imperfect digestion, because the symptoms of each prevailed, and also because it is well known that gastro-intestinal irritation may be reflected to all parts of the body, causing most alarming symptoms. Moreover, it is established that constant acidity and fermentation in the stomach and bowels invariably give rise to lithæmia, oxaluria, or phosphaturia. The presence of either of these conditions of the system may so affect a susceptible nervous system as to cause neuralgias, twitching of groups of muscles, shooting and burning pains in the limbs, numbness and coldness in different parts of the body, imitative locomotor ataxia and paralysis, vertigo, violent headaches, and functional derangement of the mind. This fact has been elaborated in a masterly manner by Ralffe in his immensely valuable work on "morbid urine." He shows conclusively that there is a wonderful relation between an acid

state of the system and a host of the most common and alarming nervous symptoms and functional nervous affections. It is also proper to add in this place that it is believed by many investigators at the present time that intestinal fermentation produces certain chemical gases and alkaloïds which, when absorbed into the blood, make a profound impression upon the nervous system. It is maintained that their absorption practically introduces a poison into the blood, followed by symptoms of disease which are vaguely attributed to various conditions. Brunton well said that "perhaps we are not yet sufficiently alive to the important results produced by the absorption from the intestinal canal of substances generated in it by fermentation or imperfect digestion. We recognize the danger of breathing gas from a sewer, but probably we do not sufficiently realize that noxious gases may be produced in the intestine, and, being absorbed into the circulation, may produce symptoms of poisoning."

3. The prevalence of these general conditions and probabilities pointed to the necessity of adopting all the usual methods of diagnosis—such as inspection, palpation, percussion, and, in addition, an analytical study of the blood, urine, and feces. Inspection revealed in this case that the abdomen was greatly distended and abnormally prominent. Palpation and percussion disclosed that the stomach and bowels were full of gas and that there were points of tenderness over them. These marked evidences of gastrointestinal disturbance, together with signs and symptoms of lesser importance, were verified by repeated microscopic studies of the blood. Such method showed the presence of *mycoderma aceti*, or what are better known as yeast ferments, or the absorbed products of acidity and fermentation. When these are found in the blood they are proof positive that improper food is being taken, and that diges-

tion is imperfect. In addition to careful and repeated study of the blood there was a thorough and daily examination of the urine. At first its specific gravity was about 1.030, and it contained an excess of phosphates and bile. The microscope showed uric-acid crystals, but no evidence of degeneration of tissue. It is the rule in these cases for the urine to be very dense with phosphates and bile, and to show more or less crystals of either uric acid or oxalate of lime. In this case constipation prevailed and the fecal discharges were variable.

Turning now from this rapid view of the history, causation, and diagnosis of this case, a few remarks will be made regarding the treatment it received.

In the first place, an effort was made to place the patient under the most favorable hygienic and moral conditions. He was located in a large airy room, and attended and accompanied by his wife and child. The help and encouragement of the wife were utilized as far as possible, with a view of steadying and maintaining a healthful mental condition. It was necessary to meet the tendency to mental irritability and depression in every possible way. With the favorable surroundings went the strictest injunctions as to complete relaxation from work, care, anxiety, and physical fatigue. It is useless to attempt to treat such patients unless the mind can rest and be diverted from the corroding worries incident to domestic and business life. It is safe to say that gastro-intestinal indigestion, accompanied by excessive nervous irritability, will never yield to any form of treatment unless these conditions obtain. The processes of digestion must be allowed all opportunity that is possible, and what nerve power there is must be saved for the promotion of organic functions. The law that rest and sleep, mental relaxation, and composure are absolutely essential to restoration needs to be imbedded in the mind

of the patient. The patient must yield to this law in a cheerful, obedient, and helpful manner, as a condition precedent to recovery. In this instance mental and bodily rest was insisted upon, until the system was rested and refreshed. With a view to promoting nutrition, baths, friction, and daily massage were adopted, and served a useful purpose. These methods tended not only to work the nutriment into the system, but also to divert the blood and nerve currents from the brain to the functions of organic life. Afterward the invigorating effects of unobstructed fresh air and sunlight were sought, and the patient was advised to sit out of doors, and to take short walks and an occasional ride whenever the weather would admit. He was always enjoined, however, never to allow diversion and exercise to overtax his nervous system, and thus cause fatigue. It is believed that the attention given to these common-sense moral and hygienic regulations did much to bring about the improvement that soon supervened. In other words, they afforded the conditions that made still other efforts operative and helpful.

The next step in the management of this case was to place the patient on a suitable diet. The indications were for one that was light, palatable, easily digested, non-fermentable, and nutritious. These were cardinal conditions that had to be met before any progress could be expected. It was not reasonable to try to cure with fermentable foods a case in which acidity, fermentation, and flatulence were sources of intolerable misery. Consequently, all sweet, starchy, and greasy foods, all fruits and vegetables, as well as everything containing acids, were displaced from his diet at the outset. The great object was not only to carefully eschew every indigestible substance, but to avoid the causes of acidity and fermentation. It was believed that the rigid exclusion of such causes would enable the stomach and

bowels to regain their normal state, would favor the processes of digestion, and would avoid an immense amount of discomfort. With these definite ends in view, the patient was placed upon a carefully regulated animal diet, composed mostly of beefsteak, and the muscle pulp of beef prepared by a machine made for the purpose. The latter afforded him a simple, concentrated, digestible, and non-fermentable diet, yielding the maximum nourishment from the minimum effort. Of this he was allowed every four or five hours as much as his stomach would easily tolerate and digest. At times, as he became tired of this single preparation, he was allowed choice beefsteaks, which answered much the same purpose but were not so digestible. Besides directing this diet, every effort was made to know that it was completely digested from day to day. In these cases it is not enough to order a particular food, but it must be known that it is being entirely digested. This information should be obtained from day to day by careful inquiry, thorough examination of physical signs, and an analytical test of the blood, urine, and feces.

As soon as the machinery of the system gets to doing its work well, the physical signs of disease will disappear and the organic products will show good work. On the contrary, if it does not get to working well, physical signs of disease will prevail, the blood will show abnormal elements, the urine will be highly colored and heavy with excrementitious products, and the feces will show undigested food. It is wonderful how accurately and promptly physical signs and abnormal products will show whether the processes of digestion, absorption, and assimilation are going on as they should. In this case these conditions were watched more or less from day to day until it was found that the food was agreeing with the patient and the organs were doing their work well. Subsequently, as the patient

improved, a larger amount and a wider range of food were allowed. At first he was given a small piece of stale bread, then from two to four ounces of milk, then a little game, and ultimately some vegetables. The effect of these additions was carefully watched, and they were continued or dispensed with as he was able or unable to digest and utilize them. As a result of this carefully selected and well-regulated diet, relief from gastro-intestinal pain soon ensued, and the host of secondary nervous symptoms grew beautifully less. In a single month he passed from constant wretchedness to a state of entire comfort. In other words, just as soon as the cause was removed, the miserable effects which had tormented him for years vanished.

The same degree of attention that was given to the regulation of his food was applied also to the regulation of his drinks. He was at once deprived of such drinks as tea, coffee, milk, and stimulants, and placed upon the regulated use of hot water. He was directed to take a pint of hot water systematically by the clock an hour before each meal and the same length of time before going to bed. Or, in other words, the rule was for him to take his food every five hours and the hot water four hours after taking food. This allowed four hours for digestion without the presence and interference of a great quantity of liquid. Moreover, the use of a large amount of hot water tended to dissolve and wash downward any accumulation of tough, stringy acid and fermented mucus that was left in the stomach, thus preparing the way for the next meal. It also maintained the volume of the blood, stimulated the secretions, and favored a freer action of the liver, kidneys, and bowels. In short, the object was to quench thirst, keep the stomach cleansed of catarrhal mucus, aid downward action of the bowels, "flush out" the liver and kidneys, and maintain the specific gravity of the urine at about 1.015. The great utility of the internal use

of hot water in the treatment of gastro-intestinal disease can not be overstated, but, like every other remedial agent, it must be used systematically, persistently, and for a definite purpose.

As regards medicinal treatment in this case, it is to be said that only simple remedies were used, being employed as the need was indicated. No effort was made to cure (?) the patient with medicines, but rather to put him in a condition to receive cure from the great and only sources of health—proper food, pure water, abundance of sunlight, and fresh air. Consequently only such remedies were used as tended to tone up the nervous system, stimulate the organs of digestion to better action, aid the digestion of food, and induce composure and rest of the nervous system. These were the four chief indications, and they were met as demanded from day to day. They pointed to the use of chinchona, nux vomica, damiana, salicin, cascara, pepsin, bromides, and sulphonal, which were about all the remedies required.

In conjunction with medicinal remedies went what may be styled thorough mental and moral treatment. The patient was seen daily, and great and constant effort was made to overcome the tendency to doubt, delusion, morbid imaginings, mental depression, and discouragement, so common to patients suffering from indigestion and nervous exhaustion. He was not only thoroughly examined each day, but also cheered, aroused, encouraged, reassured, advised, and rigidly held to the carefully systematized treatment now found useful in so many instances. The great object was to steady his mind, to appeal to his reason, to explain away doubts and morbid fancies, to insure co-operation in carrying out details, and to inspire hope. In this form of chronic cases, above all others, it is of the highest importance to thus gain control of the patients' emotions and mind, to lift them out of depression and evil apprehensions, and to give

them a determinate action toward health. Indeed, satisfactory results are almost impossible unless persistent mental and moral suasion enters largely into the general management of the case.

In conclusion, it can be said that, as a result of this line of treatment, the patient improved from the very first, and in three months felt able to pass from observation and return to his home, there to continue this treatment. He was not discharged cured, for in a case of such severity and long-standing the patient can not get entirely well in three months. A weakened and unreliable state of the organs of digestion lasts for a long time after the signs and symptoms of indigestion and nervous irritation have been relieved by a regulated diet and various remedies. There needs to be constant watching and judicious caution as to the quality and quantity of food taken, for many months elapse before the stomach and bowels become so strengthened as to manage a liberal mixed diet. Although not cured, he was so well started in that direction that his digestion was vastly improved, he was entirely free from gastro-intestinal pain and nervous irritability, the burning sensations in the feet and limbs had passed away, neuralgic pains in various parts of his body had all gone, mental confusion and depression were things of the past, and he was able to sleep from six to seven hours out of the twenty-four. In other words, removal of the cause, together with well-directed hygienic, moral, and medical treatment, had resulted in producing a satisfactory and comfortable effect.



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