PELLAGRA

OBSERVATIONS ON SOME OF ITS NERVOUS
MANIFESTATIONS *

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The incidence of inclination and the opportunity to observe have led me to depart from the beaten path of clinical routine and attempt to consider superficially some of the neurologic aspects of that more or less widely prevailing condition, known as pellagra—a disease old in itself but comparatively little known in the United States until within recent years, prevailing widely in the Southern states and constantly on the increase. Isolated cases are now being found more or less frequently in the North. Every state in New England, with the exception of New Hampshire, has reported two or three cases. New York and New Jersey have each reported a few, and Pennsylvania a larger number. There are doubtless a few cases not reported at all, because the diagnosis is not sufficiently clear. In 1907, while on a brief trip south I was shown a few undoubted cases, and in October, 1911, a further opportunity for more critical observation was furnished by an automobile trip from New York to Jacksonville, passing through the states of Virginia, North and South Carolina, Georgia and Florida. Isolated cases were looked up, and diagnoses and observations were made by my meager knowledge and experience, with valuable aid from some of the physicians connected with the Rockefeller Commission.

The disease is, perhaps, of equal interest to the gastro-enterologist, the dermatologist and the neurologist, although, in general, it may be briefly defined as a trophoneurosis. The types vary in races and in those situated far apart. In some cases, the gastro-intestinal symptoms predominate, possibly in those whose digestion always has been weak. In persons of an unstable nervous system, the nervous symptoms will predominate. One authority goes so far as to say that a majority of the people of the South are suffering from one form or another of corn-bread poisoning, as he terms it, and that numberless persons with indigestion who eventually recover and hundreds of persons with so-called auto-intoxication in reality have but manifestations of corn-bread poisoning.

It is difficult to group the psychic symptoms under any of the usual classifications of insanity, as every new case brings a new point of view. Most of the confirmed cases of pellagra are to be found in insane asylums, and it is to the men in charge of these institutions that we are indebted for the greater part of our knowledge of the mental symptoms. The exact relation of insanity to pellagra should attract further study and observation as to whether the majority of patients were first insane and later pellagrinous, or vice versa. An important point in favor of the conclusion that many insane persons have later become pellagrous is to be found in the character of the skin lesions, many of which show face, arm and neck lesions belonging to the early rather than to the late stages of the disease. Many pellagrins seem quite sane; others show a mental depression and vague unrest, with a sense of impending disaster. There

is scarcely any of the long train of neurologic symptoms and stigmata that may not be found in pellagra—neurasthenic fancies, paresthesias, lightning pains, resembling those of tabes, tremors of the hands and tongue and of the facial muscles, resembling disseminated sclerosis, the Romberg symptom, weakness in the limbs, exaggerated reflexes, erratic movements due to muscular spasm, convulsions, etc.

The typical cases commence with a disordered digestion or a stomatitis, diarrhea and mental disturbances, these symptoms occurring each year, having a remission in the summer and getting worse in the fall, the nervous symptoms increasing in severity with each attack. There are patients in whom perfect health has been the rule, with perhaps an attack of malaria, who apparently recover; later, nervous symptoms begin to appear. The patient gets bewildered, easily dazed, melancholy, makes mistakes in business, and may or may not have maniacal attacks, slow speech, unsteady gait, untidy habits. Six months afterward, the erythema appears on the exposed parts of the body, resembling sunburn, usually symmetrical in position, shape and outline, often accompanied with occipital headache, anorexia, pains in back and neck, dryness and burning in mouth and throat. Delusions and hallucinations are rare. The vertigo of pellagra is a symptom made much of by Italian observers. Lapses of memory similar to what is known as psychic epilepsy may occur. Refusal of food and suicidal tendencies may occur; tremors of the upper extremities are common, while incoordination is rare. The gait is usually of a spastic-paralytic type, rarely ataxic, indicating a lateral tract rather than a posterior column involvement. The skin sensibility is irregular; sometimes there is an increased sensibility to electric currents. The reaction of degeneration is rarely found. The thermal and tactile senses are sometimes lacking. The investigation of sensation is very unsatisfactory, owing to the patient's altered condition of intellect and the unreliable character of his replies to questions. Skin reflexes are usually normal. Patellar reflexes increase, but later in the disease they may be lost.

The vasomotor disturbances consist of a dilatation of the veins, with sometimes an edema. This motley array of nervous symptoms and their chaotic arrangement would seem to make the diagnosis a difficult one for even the experienced alienist or neurologist. The coexistence, however, of oral, gastric and intestinal irritation, diarrhea, and the later development of the characteristic erythema confirms the diagnosis. The whole mental and neurologic picture is indicative of a toxemia, with a subsequent degenerative change in cells of the central nervous system, notably the cortex cerebri. The most definite changes in the spinal cord would point to an involvement of the lateral tract and cross pyramidal tracts. In general, the nervous symptoms most clearly resemble a neurasthenia interspersed with periods of excitement and delirium. Some cases, with mental defect, slurring speech, tremor of the facial muscles and of the tongue, suggest a general paresis. Remissions and relapses are frequent. Heredity seems to play no part in the etiology.

In Italy, the disease is said to be confined to the lower classes, poverty and pellagra being interchangeable terms. In this country, all classes seem to be affected alike. Usually the victims are robust and well nourished before becoming affected. It is believed, however, that mental stress, the strain of our more or less strenuous life, undue worry over trifles, misfortune of

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sufficient magnitude to upset the nervous system, bringing about a lowered resistance, may be partially responsible for the disease. There was a definite history of corn products having been used for food in most of the cases which I observed. It is interesting to note, in addition to the corn-meal theory of causation, that many patients with hookworm disease have later developed pellagra. To solve the relationship between the two should be an interesting study.

In the few isolated cases which I observed in the Northern states, one particularly at Ossining, New York, in 1908, another at Passaic, New Jersey, last year, and still another on Long Island, the early part of this year, there was quite a decided difference in appearance from those cases observed in the South. These patients had all originally lived in the Southern states, with a corn-food history, but had discontinued it to some extent on coming north. All showed the symmetrical patches of erythema, but in a more or less dried-up condition, and without the history of periodic occurrence. The nervous symptoms had taken on a different hue; hope had taken the place of fear, and renewed energy the place of apathetic indifference. Whether this change in the character of the nervous symptoms was purely psychic or due to the different diet or to climatic changes is problematical. It would be interesting in the future for physicians coming in contact with cases of pellagra in the Northern states to note whether patients had formerly resided where pellagra was prevalent, or whether they had been resident natives of the one locality.

Corn-food products as an etiologic factor are worthy of investigation, even in the North. For the past two years I have made observations along this line, and am firmly convinced that the spoiled-corn theory is of sufficient interest to stimulate further observation along that line. Throughout the country at large, particularly in the North, more and more corn is being raised each year, much of it for ensilage purposes. It is not uncommon for seed corn to be in storage for weeks before being planted, and in a particularly wet season, or if not stored in a dry place, to overheat, and even commence to grow, thus unfitting it for seed. Corn of this kind is often ground up and used for food for both man and cattle, and, occasionally, fed to poultry without being ground. Although I have never been able to trace any direct bad results to the use of such corn as food for human beings, I have in several instances seen flocks of chickens, those eating the whole grain, affected with a strange malady, with which the farmer was unfamiliar, the symptoms being largely a staggering gait and a refusal to take food and drink, the fowl remaining in seclusion until death claimed it.

No claim is made that these studies are at all scientific; they are of a very superficial character, and my only object in offering them as a contribution is to stimulate further studies and observations, especially in the Northern states, where isolated cases are appearing from time to time. One should be on the alert for it in all out-patient clinics, and even in private practice. It is well to remember that there is not necessarily an erythema in the early stages. Students in the London School for Tropical Medicine are taught to make a diagnosis of pellagra without an erythema. Prevailing conditions point to an increase in the number of cases as time goes on, and we should fit ourselves to do our part toward the elucidation of a comparatively new and vastly important pathologic condition.

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ABSTRACT OF DISCUSSION

DR. PAUL V. ANDERSON, Richmond, Va.: There is no mental classification which exactly fits pellagra. One of my patients was maniacal; almost all of the patients are depressed. Apprehension is a marked feature in almost all cases; the patients fear some impending danger. There is frequently in cases of pellagra a history of ill health for a number of years. Quite a number of my cases were diagnosed as neurasthenia three or more years before marked mental symptoms developed. Two or three patients were also treated for rheumatism. The course of the disease in most cases has been practically three years. The gastro-intestinal symptoms develop first and, although diarrhea is always present at some time during the trouble, it is not always constant, and, at times, there is constipation or a constipation alternating with a diarrhea. In the first summer, there may be only a slight erythema on the exposed surfaces. Especially noticeable is the fact that as the erythema disappears and as the parts scale, there is left a smooth, purplish and glistening surface. A slight diarrhea and more or less emaciation are present in addition to the erythema. Apparently the patient recovers, but there is a recurrence in the second summer; the patient may again apparently recover, but in the third summer, as a rule, the mental and nervous symptoms develop, and at this period many patients die. Death frequently comes slowly, however. The patients become markedly emaciated; they totter about, with feet spread widely apart, and with ataxic gait. Some complain of agonizing pains in the legs and back and frequently just before death there is marked opisthotonos. Dr. Tucker, of Richmond, Va., in a report of eighty-eight non-institutional cases, has well brought out the neurologic points of this disease.

DR. G. H. MOODY, San Antonio, Texas: Practically all the patients are anemic, and all are neurasthenic or psychasthenic. I think that in all cases the nervous and mental symptoms will show up rather early, unless the case improves. They are frequently the first symptoms present for several weeks. I have seen patients recover without developing more mental symptoms than some little anxiety and apprehensiveness, such as has been described. The anxiety characteristic is so constant as almost to constitute an anxiety psychosis. The prognosis in these cases is better than was formerly believed. Authentic reports of 90 per cent. mortality have been made, but these were from pauper cases which naturally could not have the best attention in all respects. Good attention, good nursing, rest and proper nutrition and hygiene are very important in the treatment of these cases. Drug medication is of questionable importance. Figuring on the proposition of a protozoan disease, a Wassermann was made in a number of cases with negative findings. Salvarsan was given in half a dozen cases; each improved at least temporarily, and three of the patients apparently recovered. Many of the improved patients do not seem to get back entirely to normal; they remain somewhat neurasthenic and somewhat below normal in nervous and mental stamina and in self-reliance. I believe that pellagra occurs more frequently in neurotic individuals, and for that reason I do not know how much of the neurotic tendency might have been present had there been no development of pellagra. The medicinal treatment of pellagra outside of that purely symptomatic is sodium cacodylate.

DR. B. R. TUCKER, Richmond, Va.: I do not think that pellagra is primarily a nervous disease. I have investigated several hundred non-institutional cases, with the hope that it possibly might be found to be primarily a nervous disease. Lombroso spent his life in trying to prove that corn was the cause of pellagra, and disseminated a view which has taken hold all over Europe and this country until recently. In a very careful study, covering 105 different points, of eighty-eight cases of which I have complete statistics, I find that nine of the patients did not like corn; the question covered not only corn-bread, but corn-cakes, and even such things as corn-syrups, corn-whisky and any form in which corn is taken. Dr. Hill has said that if spoiled corn was the cause of pellagra, the Southern army would have been annihilated during the Civil War without any lead. Most Southerners are corn-eaters; in the North corn is eaten in the form of corn-flakes,

corn-syrup and corn-meal and possibly in other ways. There is no such thing as pellagra from corn poison. In the investigation of these early cases, I never saw a case that occurred in a person who did not seem to have been previously debilitated. The early diagnosis of pellagra is rather difficult. Any person may be nervous and have diarrhea; if you are going to rest on those two symptoms you certainly are making an astute diagnosis. There are two forms of the disease, the fulminating form, which goes on to death in two or three months, and the chronic form, which may recur sometimes for years. It has been stated that the second year is worse than the first, and the third worse than the second, both from the mental standpoint and the standpoint of cutaneous and gastro-intestinal symptoms; I do not believe that this is so. Many cases are improved the second year. I have found that some of my patients had had unrecognized pellagra for five or six years, but most were in the first year of the disease, which started as a gastro-intestinal upset, if a very severe stomatitis be included, in over 90 per cent. of the cases. The sequence of symptoms was, as a rule, gastro-intestinal, cutaneous and then nervous and mental. The nervous and mental symptoms formed no regular symptom-complex; they were simply the individual reaction of the patient to an infection or a toxemia. I agree with Dr. Spiller, who in his examination of the cord in some cases of Dr. Anderson, stated that he thought from the appearance of the cord that pellagra was probably of infectious origin. From the early clinical history of cases, which begin with stomatitis, gastritis and usually diarrhea (and these are often forgotten unless one goes very carefully into the history), and which then show cutaneous symptoms, and at the same time or later manifest nervous and mental symptoms, the disease looks like an infection with the cutaneous manifestations as trophic disturbances, and the mental and nervous manifestations as toxic disturbances of a gastro-intestinal infection.

DR. TOM A. WILLIAMS, Washington, D. C.: Pellagra is not a nervous disease. I should not regard the skin lesions as trophic; I consider them as toxic, just as eczema is toxic. What we really have here is an active agent in the nature of a toxin, producing these symptoms. A very important symptom, sialorrhea, is often overlooked, but when taken into consideration, together with violent acute diarrhea, lasting several weeks sometimes, one does not require the pellagra to make the diagnosis, more especially when the gastro-intestinal symptoms are accompanied by some signs of the mental inhibition which is characteristic in some stages of the disease. I do not agree with the statement that the disease does not conform, mentally speaking, to any well-known clinical picture. The disease is typical; it might be the prototype of a well-known picture of mental disease, namely, the *confusion mentale* of Chaslin, which is the mental syndrome shown in pellagra. It is the toxic psychosis. The type of the disease is a confusion of ideas and an inability to react in the usual way. The anxiety state may be in some cases secondary to the feeling that one is severely ill and about to lose one's mind. These conditions of confusional insanity may be well seen in the mental disturbances resulting from alcohol. The confusional state may be maniacal depressive, or it may be subject to definite delirium with more or less systematized delusion, varying with the time and degree of severity of the case.

DR. D. E. HOAG, New York: The gait in the few cases which I saw seemed to be of a spastic type. I do not think any of them were ataxic. Whether that gait varies from time to time, whether it is spastic this week and ataxic a few months later, I do not know. My object in bringing a paper like this before a Section of this kind was to see if there was anything in the early symptomatology of the disease, so far as nervous symptoms are concerned, that would fit in with any of our neurologic syndromes. If there is ever going to be a possible serum that may be used, it would have to be used in the early stages. Consequently, it would be valuable to recognize the symptoms in their very incipency.

I disagree with the observation that pellagra always occurs in the anemic and weak, for I inferred from the answers to my inquiries that it often did occur in the robust and strong.

A CASE OF TRAUMATIC PSYCHOSIS ASSOCIATED WITH AN OLD DEPRESSED FRACTURE OF THE SKULL, FRONTAL REGION; OPERATION; RECOVERY *

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We deem this case of sufficient interest to report for the following reasons: It was a case of a traumatic psychosis which had already been treated for a year and four months in a private hospital for the insane, without improvement, before it was seen by us. There was a history of an old compound fracture of the skull over the right inferior frontal region, sustained about eleven years prior to the onset of the psychosis. A surgical operation revealed an area of depression of the inner table of the skull, at the site of the old injury, corresponding to the right middle and inferior frontal convolutions. And, lastly, after the operation for the removal of the depressed bone there was a rapid recovery from all symptoms and a restoration of the patient to his family and his business. The operation was performed in January, 1911, so that sufficient length of time has elapsed to enable us to look on the recovery as permanent.

REPORT OF CASE

History.—The patient was a man, aged 50, single, born in New York. He was the fourth of twelve children; his birth was at full term and unattended with difficulty, but as an infant he was "sickly." No mental or neuropathic heredity was ascertained. From youth until the age of 40 the patient drank to excess. He contracted gonorrhea, but denied luetic infection. From the age of 10 he had earned his own living and assisted in the support of his family. In the year 1898, a private business venture not succeeding, he became worried, drank more heavily, and one evening, while under the influence of liquor, shot himself in the head with a 32-caliber revolver. He was not rendered unconscious, and was able to walk several blocks alone to a hospital. The hospital records merely note the removal of a bullet for compound fracture of the skull and the discharge of the patient after dressings had been applied. No anesthetic was taken for the extraction of the bullet, and no ill effects followed. The patient continued at work and there is no record of a psychosis at this time. He also continued to drink some after this, but less than formerly, until 1902. Since 1902 he has been a total abstainer.

For eight months, in 1898 and 1899, he had gleet, and in 1901 a mild attack of gout in the left foot. Sexual impotence had existed since some time prior to the suicidal attempt.

Onset of Symptoms.—Mental and nervous symptoms began in July, 1909. This was eleven years after the head injury and seven years after the patient had stopped drinking. The symptoms were of gradual onset and development. At first there were impaired digestion, a feeling of soreness all over, cold sweats, pains in the head and insomnia. Then supervened a loss of usual self-confidence and capacity for work, followed by a fear of being alone and other anxious fears. When alone he had impulses to jump from the window and a general panicky feeling. He lost 40 pounds in weight in six weeks. All attempts to do work only increased his symptoms and developed pains in the back and a feeling of oppression in the chest. At times he would weep and laugh hysterically. There was hardly a sustained or true melancholia, but more or less depression undoubtedly existed.

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