

Eskridge (J. T.)

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VASCULAR LESION;

*TO WHICH IS ADDED AN ACCOUNT OF THE
AUTOPSY, WITH REMARKS*

BY

J. T. ESKRIDGE, M.D.,

OF DENVER, COLORADO;

PROFESSOR OF NERVOUS AND MENTAL DISEASES IN THE MEDICAL DEPARTMENT
OF THE UNIVERSITY OF COLORADO; NEUROLOGIST TO THE ARAPAHOE
COUNTY AND ST. LUKE'S HOSPITALS.



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TUMOR OF THE BRAIN SIMULATING A VASCULAR LESION; TO WHICH IS ADDED AN ACCOUNT OF THE AUTOPSY, WITH REMARKS.¹

BY J. T. ESKRIDGE, M.D.,
OF DENVER, COLORADO;

PROFESSOR OF NERVOUS AND MENTAL DISEASES IN THE MEDICAL DEPARTMENT OF THE UNIVERSITY OF COLORADO; NEUROLOGIST TO THE ARAPAHOE COUNTY AND ST. LUKE'S HOSPITALS.

THE case which I wish to study with you to-day is of especial interest, because the most obtrusive symptoms point to an entirely different lesion than the one from which the patient is suffering.

Michael P. K., twenty-seven years of age, of New York, a waiter, single, white, living in Colorado for the past seven years, was admitted into the nervous wards of the hospital about 2.30 P.M. yesterday in a semi-conscious condition. His temperature was 98.4°, the respirations 22, and slightly stertorous when he was not aroused; the pulse full, and 64 per minute. The resident physician does not know whether any paralysis was present at the time of his admission or not, as he did not make any examination to determine the point. During the afternoon, owing to the kind perseverance of the nurse, she succeeded in arousing him sufficiently to get some points in his history. He came of a family of hard drinkers, and he had five brothers, all of whom indulged freely in the use of alcohol. The patient

¹ A Clinical Lecture delivered at the Arapahoe County Hospital, Denver, Col.



stated that he had always enjoyed good health until about six months ago, when he contracted a severe cold. Since then he has not been very well; at times he has felt all right, and at others he has complained of a numb pain in the head, and a confused sensation, which prevented his thinking connectedly.

It was ascertained from his acquaintances that up to the time of the occurrence of his present trouble he had been occupying a room in a lodging-house, and nothing wrong was noticed by any of the lodgers until yesterday morning, when he arose, apparently as well as usual, and began to dress himself, but before he had completed his toilet he fell to the floor. When found, a short time afterward, he seemed confused and was unable to rise.

At the time of my first visit, at 8 P.M., a few hours after his admission into the hospital, he was lying quietly and sleeping, but his respiration was slightly noisy when left to himself. His temperature was normal, and equal in each axilla, the pulse 72, and rather full and strong. He was easily aroused from his stuporous sleep, and for a few moments seemed to realize what was said to him; but if left alone, he immediately relapsed into an apparently unconscious condition. His left arm and leg were almost completely paralyzed; the face was apparently unaffected, and he protruded the tongue in the median line. Sensation seemed to be normal. The right knee-jerk was slightly increased; the left a little greater than the right. The plantar reflexes were absent, and no ankle-clonus could be elicited. The cremaster and abdominal reflexes were slight on the right side and absent on the left. The pupils were equal and widely dilated, but reacted slightly to light. There was no paralysis or paresis of the external ocular muscles. On examining the fundi of the eyes a condition of bilateral optic neuritis was found. The disc was more swollen in the

right eye than in the left, but the latter had reached a more advanced stage, and presented distinct atrophy of the optic nerve, with arteries very small. The other special senses, so far as I was able to determine, were normal. The urine was free from albumin and sugar, and the lungs seemed to be in a normal condition. Headache was not complained of unless the man was aroused and asked about it, when he would say that his head pained, but his appearance did not indicate much suffering. His bowels were freely evacuated, and he slept during the night, unaided by a hypnotic.

His stuporous condition has deepened since my visit last night, and I have brought the patient before you to-day so that we may study his condition together, hoping that I may be able to bring out some points in connection with this case which may aid you, even in the absence of a history, in dealing with persons found in a state of partial or complete unconsciousness.

On reëxamining our patient to-day we find him in a condition very much the same as that in which I found him at my first visit some sixteen hours ago, with these exceptions: that the paralysis of the left arm and leg has deepened, so that their muscles are now nearly flaccid; that the left side of the face, from the nose downward, is slightly paretic; and that the state of stupor is rapidly passing into coma. You see that I cannot get any intelligent response from him. When I call to him he simply opens his eyes and moves his lips, and immediately sinks into a condition of blissful unconsciousness of his impending fate.

You must remember that a condition of partial or complete unconsciousness may be produced by syncope, from heart-failure; by chloral, opium, or alcohol poisoning; by uremia, epilepsy, or hysteria; or by an apoplectic state caused by apoplectiform attacks occurring in cerebral congestion or paralysis of the insane; by "simple apoplexy" in the aged, or by apoplexy from

embolism, thrombosis, abscess, cerebral hemorrhage, or tumor of the brain.

You see, then, that we may have a more or less sudden disturbance of consciousness, from perversion of brain-function, and that this may be due either to direct or indirect causes acting upon the brain. In some cases of suddenly induced unconsciousness, even from structural brain-disease, there are but slight, if any, localizing symptoms, so that, in the absence of a consecutive and reliable history, you may at times be sorely puzzled to determine the cause of the unconsciousness. When persistent paralysis exists, especially if it is associated with optic neuritis, all such general causes of unconsciousness as syncope from heart-failure, chloral, opium, alcohol, and uremic (?) poisoning may be excluded. The bilateral optic neuritis, excluding lead-poisoning, uremia, and profound anemia, is positive proof that the trouble is organic, and therefore hysterical and epileptic coma, as well as "simple apoplexy," may be disregarded in the diagnosis of the lesion in the patient before us.

Having excluded all causes, except those of an organic nature, to which of the numerous organic brain-lesions may we attribute this man's condition?

For diagnostic purposes, these lesions may be divided, as regards the time consumed in their development, into sudden, acute, and chronic.

The sudden lesions are vascular in their nature, and are due to embolism, thrombosis, or cerebral hemorrhage. You must all realize the importance of a consecutive and reliable history of the patient prior to the development of the prominent symptoms of the disease, and an intelligent account of the mode of invasion of the disease. In the absence of such a history it is sometimes utterly impossible to make a diagnosis. With the light which a reliable history throws on a case, positiveness in differential diagnosis may be obtained by care-

ful analysis and comparison of all the symptoms. Unfortunately, in the history of the present case, the information is meager, and it is questionable to what extent it may be relied upon. Prior to the development of the paralysis yesterday morning but little is known, except that for the past few months the man found it difficult to think, owing to what he called a confused feeling in his head. Pain in the head was only complained of as a heavy sensation. When I first saw him he made so many contradictory statements that I was unable to learn whether he had ever had syphilis. He was not seen until several minutes after he fell on the floor while dressing in the morning, and when found he was unable to rise and seemed stupid. He could give no account of this attack. It is fair to presume that the paralytic symptoms and mental confusion came on comparatively suddenly, although we must bear in mind that he might have gotten out of bed with impaired motility and mental power, and that these simply increased while he was trying to dress himself. In embolism there are usually no head-symptoms antedating the attack, and to justify the diagnosis of cerebral embolism we should be able to find a cause for the embolus, such as acute or chronic endocardial trouble. No such cause exists in this patient. In rare instances embolism gives rise to optic neuritis, but it is evident that this could not occur until several days had elapsed after the occurrence of the brain-lesion, so that we can exclude embolism in this case. Without going into a detailed account of the symptoms of thrombosis and cerebral hemorrhage, a consideration of these may be discarded in the diagnosis of our patient's trouble, as insufficient to account for the presence of optic neuritis, which does not arise from either of these vascular lesions.

You see, then, that a sudden or vascular lesion, although the paralytic attack was undoubtedly more or less sudden

in its onset, will not account for all the symptoms which this man presents; I wish you to bear in mind, however, that while a vascular lesion will not account for all the symptoms, it would account for the rapid development of paralysis, and such a lesion may occur as a result of a more chronic malady and give rise to sudden symptoms, thus making a diagnosis, in the absence of a reliable history, exceedingly difficult. Of this I may have something to say later, in explanation of some of the symptoms presented by our patient.

The acute lesions of the brain are inflammatory in their nature, and require from a few days to a week or more to reach their height. They are all, as a rule, attended with some rise of temperature and considerable headache. Whilst optic neuritis may appear early (fifth day, Gowers), atrophy, such as is found in the present case, is not seen until after the second week. So that normal temperature, absence of marked head-pain, the sudden onset of the main symptoms, a few hours ago, and the presence of optic neuritis, with beginning atrophy, enable us to exclude the acute organic brain-lesions.

We have left, to account for our patient's condition, which seemed on superficial observation to be due to some sudden lesion, one of the chronic organic brain-diseases. We can exclude the scleroses, and in the light of what history was obtainable at the time of the patient's admission into the hospital, together with the symptoms found on examination, we need to consider only two lesions, viz., tumor and chronic abscess.

The diagnosis between tumor and acute abscess of the brain is usually easy, but between tumor and chronic abscess it is sometimes most difficult, if not impossible, especially if we find ourselves laboring under the difficulties encountered in the present case, in which a reliable history and accurate observation of symptoms, prior to the sudden development of the apoplectic symptoms, are entirely wanting.

In chronic abscess there is usually the history of a cause of suppuration, such as chronic ear-disease, infective disease of the nose or of the bones of the skull, or suppuration in the lungs or elsewhere. In abscess of the brain one of these causes is found in about three-fourths of the cases. After the first disturbance, caused by the formation of pus, a latent period of several weeks, months, or years may follow, during which the patient may complain of slight or no brain-symptoms. The latent period is sometimes cut short suddenly by terminal symptoms resembling apoplexy, such as paralysis, convulsions, coma, and death.

Most tumors of the brain run a gradually increasing course, with decided head-symptoms, without a latent period, and with final symptoms in accord with the previous history of increasing gross organic brain-lesion. But we must remember that gradually-growing tumors in a portion of the brain, the destruction of which gives rise to no definite focal symptoms, may run a comparatively latent course, and finally bloodvessels may be encroached upon and occluded, giving rise to symptoms resembling thrombotic apoplexy. Again, in the course of tumor of the brain we may have the occurrence of a vascular lesion, in every way independent of the morbid growth. One such case was observed by me in this hospital about a year ago. The patient was suffering from a slowly-growing tumor attached to the dura on the right side of the brain, and a large hemorrhage occurred into the left corpus striatum and proved fatal in a few hours. The autopsy revealed advanced degeneration of all the large arteries at the base of the brain. The hemorrhage that sometimes occurs in the substance of vascular tumors rarely proves fatal.

Finally hemiplegia may occur in the course of brain-tumor, and death result; and the autopsy may afford no explanation of the suddenly-developed symptoms. Some years ago, Gowers (*Brain*, 1879, vol. i, p. 48)

reported a number of cases of sudden paralysis occurring in the course of cerebral tumor.

The points in the case of the patient before us in favor of chronic abscess are: excluding a vascular lesion, as we have done already, terminal symptoms resembling apoplexy in a case of latent chronic brain-trouble, and optic neuritis.

Evidences in favor of tumor rather than abscess are: absence of a cause for the development of abscess (this is always a strong point against abscess); intense optic neuritis, as evidenced by considerable swelling of the right optic disc, and absence of rigor and fever, which so commonly attend the terminal stage of chronic abscess. All these symptoms, except optic neuritis, are negative ones in favor of tumor, but very positive against abscess.

The weight of the evidence is in favor of tumor of the brain, and I venture this diagnosis in view of the probability of being able to verify or disprove it by an autopsy in a few hours or days.

I wish to call your attention to the fact that, outside of gross organic brain-disease, renal trouble, lead-poisoning, and profound anemia will give rise to optic neuritis, but it has not been necessary to consider these, because of the positive evidence of a brain-lesion to account for the patient's condition, although, as a matter of fact, the urine is free from albumin, there are no evidences of chronic lead-poisoning, and the patient is not anemic.

Having made the diagnosis of tumor, is it possible in the present case to localize it? The base of the brain can be excluded, from the fact that the cranial nerves have not been affected; and the cortex of the convex surface is probably not the seat of the growth, in the absence of convulsions; and a growth in the cerebellum would not give rise to distinct hemiplegic symptoms, without interfering with the functions of the medulla or

pons. In all these situations headache would probably have been a prominent symptom, and you remember that, on the patient's admission into the hospital, he stated that he had not suffered much from head-pain.

Excluding, then, these situations as the probable seat of the growth, we have left the centrum ovale in the right hemisphere. The growth did not have its origin in that portion of the centrum ovale occupied by the fibers of the corona radiata which connect the anterior two-thirds of the posterior half of the internal capsule with the cortical motor region, else paralysis would have been an early, instead of a late, symptom. The tumor has had its origin either anteriorly or posteriorly to the radiating fibers of the motor region, and these fibers have been encroached upon by a sudden extension of the morbid process to them. Whether the disease began anteriorly or posteriorly to the fibers of the motor region is not an easy matter to determine—especially so in the absence of a complete history. We learn that there was some difficulty in mental concentration for months, but this was not sufficiently marked to attract the attention of the man's friends. Lesions in the centrum ovale posterior to the radiating fibers passing to the motor region might run an almost completely latent course, but when the anterior lobe of the brain is the seat of tumor we should expect to find mental disturbance, such as apathy, inability to concentrate the mind, with, probably, more or less moral obtuseness. In the present case, in the absence of a reliable history, I must confess that I am unable to make a more definite diagnosis as to localization than the centrum ovale of the right hemisphere.

In regard to the treatment of the present case little or nothing can be done. The patient is now comatose and he will not live more than a few hours, or a day or two at the most. It is too late to attempt to get the effects of medicine, and were we sure as to the exact location

of the morbid process, the physical depression is too great to justify an effort for its removal by surgical means. I shall not discuss at length the probable nature of the tumor, but it is most likely syphilitic or gliomatous; although, as the patient dated the beginning of ill-health from a "cold on the lungs," it may be tuberculous. I will report further on this case at our next clinic.

(After the lecture the patient continued to sink into a deeper state of coma and died about twelve hours later.)

At the autopsy, made ten hours after death, by Dr. Axtell, in the presence of Drs. McLauthlin, Mack, and Hull, and myself, the brain only was examined. No abnormally firm adhesions of the dura to the bone existed. The sinuses and the veins of the dura were distended with dark, fluid blood. No clots were found.

The veins of the pia were everywhere filled with dark, fluid blood. There were no signs of inflammation of any of the membranes, and the pia readily stripped from the brain. The arteries at the base were empty and showed no evidence of disease. The left cerebral hemisphere appeared normal throughout. The centrum ovale of the right hemisphere, from near its posterior portion in the occipital lobe to a point opposite the middle of the fissure of Rolando, showed evidence of disease. This entire area was occupied externally by what appeared to be ragged brain-substance, some portions of which were softer than the normal brain-tissue, whilst others presented an increased resistance to the finger. The parts anteriorly and internally (toward the lateral ventricle) appeared quite soft. In the interior of this tumor-like mass was found, in one portion, one or two ounces of yellow, watery fluid, and in another, which was separated from the cavity containing the watery fluid by a portion of the growth, a sanguino-purulent gummy-looking material. Considerable of the yellowish, watery fluid was found in the right

lateral ventricle. It is impossible to say whether this found its way there before death or during the dissection. Great care was used in examining the brain, yet, on account of the fluctuating condition of the whole of the posterior portion of the right cerebral hemisphere, a rupture of the wall of the lateral ventricle could easily have taken place. None of the fluid had gravitated to the fourth ventricle, making it probable that the fluid had escaped into the lateral ventricle during the dissection.

A microscopic examination was made by Dr. Axtell, whose report is appended.

The softened material surrounding the cavity containing the fluid showed nothing but granulation-tissue; no connective-tissue elements were found; leukocytes and red blood-corpuscles were found in abundance. It was simply softened, broken-down brain-substance.

Of the gummatous substance, a large amount of granular material, composed principally of granular leukocytes, and containing numerous red blood-corpuscles, was found. The hardened portion of the brain-substance posterior to the semi-liquid material showed the usual appearance of gummatous infiltration.

With the additional light which the autopsy revealed in the foregoing case, a few points can be more intelligently discussed now than during the patient's life. What was the cause of the sudden and grave symptoms and the speedy death? What part did suppuration play in this man's case; was it primary or secondary? Do not syphilitic growths infiltrate the surrounding brain-tissue? It seems to me that the extensive softening and hemorrhagic infiltration, which were undoubtedly of recent date, prior to the syphilitic growth, and involving the coronal fibers going from the internal capsule to the motor region of the brain, were sufficient to account for the sudden paralysis. It is probable that the liquid material, which, before the sudden breaking down of the brain prior to the syphilitic growth, had been enclosed

in a circumscribed cavity, after the softening was allowed greater freedom of motion, and thus, by its pressure on the external wall of the lateral ventricle and on the great ganglia at the base, added to the shock already set up by hemorrhagic infiltration and brain-softening.

After the man's death it was learned that he had been under treatment for a number of weeks for supposed syphilis of the brain, prior to his admission into the hospital, and had taken potassium iodid during this time. The treatment accounts for the yellowish liquid found in the interior of the growth. I have observed, post-mortem, several cases of syphilitic tumor which had been treated by potassium iodid, and in most of these, especially when large doses of the medicine had been used, a considerable amount of a straw-colored watery fluid has been found. I have not seen this state of affairs in cases that have not received anti-syphilitic treatment.

What part did the suppuration play in this man's case; was it primary or secondary? So evident were the characteristics of pus found at the autopsy, that at first I was inclined to regard the case as one of chronic abscess; but the induration of portions of the surrounding brain-substance and the microscopic examination both showed the presence of a growth; besides, the pus was not of the distinct greenish color so commonly met with in abscess of the brain. Moreover, there was no odor to the pus-appearing substance. Since, then, it is not likely the formation of pus antedated the growth, it must have been secondary to it and in all probability due to the destructive process of the rapidly growing tumor. This is the first case of tumor of the brain in connection with which I have found pus. I see no reason, however, why we should not have the formation of aseptic pus from the acute softening that may take place as the result of blocking up of blood-vessels from the encroachment of a growing tumor.

The third and last question that I will consider is: Do not syphilitic growths infiltrate the surrounding brain-tissue? Gowers, in the second edition of his *Diseases of the Nervous System*, vol. ii, p. 493, under the heading "Syphilitic Growths," says: "The adjacent brain-substance is softened and more or less displaced, but it is not infiltrated by the growth."

On the other hand, Bramwell, in his work on *Intracranial Tumors*, p. 216, in quoting from Heubner on the appearances of syphilitic growths of the brain, says: "This form of tumor is never sharply defined; on examining the edges by the microscope, one may see at points apparently normal a strongly-marked cellular infiltration, which gradually passes into the healthy tissue."

Ziegler, *Special Pathological Anatomy*, sect. ix-xii, p. 311, beautifully illustrates diffuse cellular infiltration (syphilitic) of the cortical substance of the brain in a case of gummatous syphilitic meningo-encephalitis, and on page 312, after describing, in connection with this illustration, the tendency of syphilis of the membranes to involve the adjacent brain-substance, he states: "The same holds for the nodes which develop independently in the substance of the brain and cord."

Delafield and Prudden, in their work on *Pathological Anatomy and Histology*, in speaking of gummy tumors, to which they devote but a few lines, only refer to coagulation-necrosis and degeneration as taking place in the surrounding tissue.

In a case of syphilitic growth of the brain, operated on for me by Dr. Parkhill about two years ago, in a man about thirty years of age, a cavity containing about four ounces of a yellowish, watery fluid was found, and microscopically the brain-substance was indurated and softened around this cavity for some distance, making the size of the growth, from naked-eye appearances, four and a half inches in its longest dimensions, by

three and a half and three inches in its shorter. The hemisphere of the brain from which this tumor was taken at the autopsy was examined by a competent microscopist and found to be infiltrated with gummatous tissue around the growth, even in portions which appeared macroscopically to be normal.

It seems to me that since surgical operative procedure is recommended for the removal of syphilitic growths, it is of the first importance to recognize the fact that these growths affect the surrounding brain-tissue, both by necrotic softening and gummatous infiltration, and that in many cases of long-standing tumors of this nature the brain-tissue has been so extensively infiltrated that but little or no good results can be reasonably expected after the excision of the old tumor-mass. I believe that Mr. Victor Horsley is right in urging early operation for the removal of syphilitic growths, if symptoms do not rapidly disappear under vigorous anti-syphilitic treatment.

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