TWO CASES OF BRAIN TUMOR.*

BY J. M. MOSHER, M. D.,
St. Lawrence State Hospital, Ogdensburg, N. Y.

The problem of the diagnosis of cerebral tumor involves the three questions of the determination of its existence, of its location and of its nature, and cases of cerebral tumor may be classified as those in which no indications of cerebral disease are discovered; those in which the presence of a neoplasm is ascertained; and those in which the diagnosis of the growth and its location are established. In some cases the nature of the pathological process may be discerned by the visible presence of the growth, especially carcinoma, when eroding and perforating the skull; in others by accompanying diathetic conditions, as tuberculosis and syphilis, and in still another class inference may be made from general considerations, as age or sex, statistics showing the relative greater frequency of glioma and sarcoma in males; tubercle in youth; cancer and gumma in adult life.†

Circumscribed disease of the brain is susceptible of diagnosis when perverting or destroying the activity of areas whose physiological functions have been determined; the nature of the process, whether tumor, abscess, local meningitis, encephalitis, or both, softening from plug or ruptured vessel, is demonstrable only by accompanying general symptoms.

Tumor presents no pathognomonic symptom or group of symptoms, the many manifestations and combinations of the mechanical effects of pressure, irritation and destruction affording clinical pictures of wide variation. The mental deterioration following implication of the frontal lobes is counterfeited by the results of general compression due to disease elsewhere, and has only indirect significance, unless accompanied by abnormalities in the domain of sensation and motion.

J. E., female, married, domestic, æt. 32, was admitted to the St. Lawrence State Hospital April 3, 1891, with an imperfect history pointing toward primary organic disease of the, brain of

*Read at the Annual Meeting of the St. Lawrence County Medical Society, held at Gouverneur, N. Y., May 17, 1892.

†Gowers. *Diseases of the Nervous System*, pp. 869, et seq.

one year's duration. A maternal uncle was said to have been insane, and the father died of phthisis. The alleged exciting cause of insanity was impoverished living. The first symptoms were carelessness and untidiness, with gradual loss of mental power, manifested by stupidity. About six months before admission it was noticed that she dragged her feet when attempting to walk, and two months later she was unable to walk without assistance. No other statement was made at the time of admission except that she had a ravenous appetite, much greater than was natural to her, and that her weight had increased above what was usual for her. When admitted she was carried into the office. She was untidy and dishevelled; one shoe was off, and the reason was given that she had scalded the foot by upsetting a tea-kettle upon it. She did not answer questions, and had a vacant, stolid, indifferent expression. She arose to her feet with assistance and stood alone, but could not maintain her equilibrium with her eyes closed. She remained in bed until the date of her death, April 23, 1891, twenty days after admission. The clinical history during this interval was a simple record of helplessness, with variable degree of paralysis of the limbs and entire loss of control of the sphincters. The stupor became gradually more profound. Two days before death there was a sudden change for the worse; coma and stertor ensued, and she did not again rally. There were no convulsions.

At the autopsy, made twenty hours after death, note was made of the expressionless appearance of the face, not unlike the fatuous physiognomy of general paralysis. After removal of the calvaria and incision of the dura, the brain substance and pia-arachnoid protruded through the opening in the latter; the vessels were distended with blood, and the surfaces of the convolutions were flattened. A nodular growth, about the size of a closed fist, occupied the tip of the left frontal lobe. It was attached at the base to the pia mater; its free surface lay against the hemisphere, which was excavated to accommodate it. The tip of the lobe had disappeared; parts of all the convolutions remained, but were compressed. The excavation was backward and inward, and in the posterior wall of the cavity, thus formed, was the crescentic orifice of the anterior extremity of the lateral ventricle. The pressure extended toward the median line, and the right hemisphere was distorted and compressed. The inter-

ior of the tumor was a reticulated stroma containing vascular tissue more softened near the center than at the periphery.

Sarcomatous growths are often permeated by numerous thin-walled vessels, and rupture of one of these may have caused the crisis, which preceded by a few hours the fatal issue. Imperfect history and short observation of the case gave little opportunity for accurate clinical record or diagnosis.*

L. D., male, married, farmer, æt. 40, was admitted to the St. Lawrence State Hospital April 21, 1891. His father and mother were cousins, and a paternal aunt was insane. He had been intemperate and dissolute, was said to have had syphilis, and his insanity was alleged to be due to heredity and inebriety, the form being dementia with melancholia. He was blind at the time of admission, weighed 159 pounds, had a patch of tinea versicolor upon the breast, and his gait, possibly owing to his blindness, was slow and uncertain. His tongue was coated. It was stated that for several years he had been a constant and excessive drinker, frequently becoming intoxicated. About a year before admission he was said to have received a severe blow upon the head, and shortly thereafter his sight became dim, the failure of the left eye preceding the failure of the right by a few weeks. Total blindness resulted in about four weeks from the first observed symptom. He afterward had several attacks, called "dizzy periods," and his wife stated that he had had mild convulsive seizures which affected the right side and left it paretic.

*The results of destruction of the prefrontal regions by pathological lesions confirm the conclusions reached after experimental extirpation in animals. In remarks upon a case of tumor of the left frontal lobe, (*The Lancet*, June 4, 1892, p. 1,241), Dr. Ferrier summarizes these results as follows: "Destruction of the prefrontal regions in monkeys causes no obvious physiological symptoms, that is to say, no perceptible defects in the domain of motion or sensation, but the separation causes a mental degradation of a peculiar character, which may be characterized as due to the loss of the faculty of attention or power of mental concentration. Monkeys deprived of their frontal lobes, instead of being as before actively interested in their surroundings and curious as to all that came within the field of observation, became apathetic or dull, or continually dozed off into sleep, responding only to the sensations or impressions of the moment, or varying their listlessness with restless and purposeless wandering to and fro. Similar symptoms have been observed and recorded by many observers in connection with tumors of this region. It is not until the tumor presses backwards and directly or indirectly disturbs the functions of the central and posteriorly situated convolutions that motor or sensory symptoms declare themselves; and until these have occurred, or until there are signs of implication of the nerve or other structures in the anterior fossa, an accurate diagnosis of the position of the tumor cannot be made with certainty, inasmuch as loss of memory and impaired power of concentration may also be produced by diffuse lesions or diseases which cause general disturbance of the brain." See also *Functions of the Brain*, p. 401.

About three months before commitment he became indifferent, careless, depressed and stupid; he exerted no control of the sphincters and resisted care, often refusing to be washed or bathed. At the time of admission he was quiet and coherent, answered questions with some intelligence, said he was confused and that he wanted to sleep a great deal. He expressed no marked delusions. Early in May he had an attack of nausea and vomiting, after which he was confined to his bed. He complained at this time of severe pain in the lumbar region extending down the right thigh to the knee, and this area was sensitive to pressure and upon movement of the body or limb. The pulse varied between 72 and 80, and the temperature only once rose to 100. Bowels sluggish; mind very dull. In the latter part of the same month an ophthalmoscopic examination, made by Dr. W. N. Bell, of Ogdensburg, revealed advanced atrophy of the papilla—the disc was a bluish gray, the arteries were very small and indistinct, and the veins injected. Patient stated that he suffered from pain in the left side of head and in the right side of body; in describing the pain he followed with his hand the left side of forehead and face, crossed the median line at the larynx, and passed down the right side and limbs. His headache became more severe, he was somnolent, and in June was semi-comatose for two days. His mental operations became slower and more confused; he hesitated in replying to questions and frequently required their repetition. At the same time he laughed childishly without adequate cause, and manifested a silly exhilaration and indifference. Tests of the senses of smell and taste were unsatisfactory. He often fell asleep while eating. His condition was one of progressive stupor with prolonged somnolence and helplessness, deepening into coma which continued until death, September 14, 1891.

Post-mortem examination was made of the head only. The skull-cap was irregularly thickened and hardened, and in the temporal region on either side was thin and transparent. There were no adhesions of the visceral dura to the calvaria, and when the latter was removed the dura was found to be dry and tense and pressed firmly out by its contents. On the right side the dura bulged more prominently than on the left, showing marked asymmetry. Over the right superior frontal convolution near its posterior extremity and from its upper surface projected a

small excrescence resembling in color and consistency the white matter of the brain; this tumor was covered by a thin layer of membrane continuous with the dura, and when the dura was removed the projection was torn from its pedicle, by which it was united with the cerebral substance. The hernia cerebri, thus formed, was about the size of a bean, and was one of the little protrusions resulting from intra-cranial pressure, which, when occurring in some numbers have been aptly termed by Clouston,* "cauliflower-like excrescences." The pia was stripped from a small area only, and no adhesions to the cortex were found.

In the anterior fossa was a large growth firmly adherent to the base of the skull. This growth was torn on attempts at removal, and when released it was lifted out with the brain and fell away from it. Its greater bulk *in situ* was on the right side. The inferior surface was attached to contiguous structures and centred at the sella turcica, which was excavated and eroded.

The pituitary body was imbedded or absorbed in the growth, and was not found. Fragments of the optic tract were discerned, but no trace of the chiasm. The inferior surface of the frontal lobes was disintegrated and softened, and partially excavated, so that its various structures could not be differentiated. The destruction involved all cerebral tissues anterior to the corpus callosum, and was noticeable in the genu of the latter, and in basal tissues as far back as the anterior perforated space. Behind this the brain was normal to the naked eye, except for the flattening of the surface, the distension of the lateral ventricles, and analogous conditions due to general compression.

The tumor was indurated, its surface nodular and irregular, and its interior revealed radiating bands of tough fibrous tissue inclosing a cellular substance, which was softened and partially broken down.

The adjacent structures affected by destructive enlargement of the pituitary body are the trunks of the second and third pairs of cranial nerves, and the inferior surface of the frontal lobes; continuous growth involves other important parts of the cerebral mass, the tumor occasionally extending to the Sylvian

*¹ *Lectures on Mental Diseases*, Am. Ed., p. 283; also *Journal of Mental Science*, Vol. XVIII, p. 153.

TO ILLUSTRATE "TWO CASES OF BRAIN TUMOR."

FIG. 1—Case 1. Shows tumor *in situ*.

FIG. 2—Case 1. Shows excavation of left frontal lobe and crescentic orifice of anterior horn of lateral ventricle.

FIG. 3—Case 1. The Tumor.

FIG. 4—Case 2. The Tumor.

(The illustrations were made from photographic negatives taken by Dr. P. M. Wise, to whom grateful acknowledgment is made.)

FIG. 3.

FIG. 4.

fissures, as in the case under consideration, or even inclosing the interpeduncular space and impinging upon the pons.

The classical symptoms of increased intra-cranial pressure—headache, vertigo, vomiting, optic neuritis and atrophy, convulsions, psychical disturbance, somnolence and coma, accentuated by the focal manifestation of crossed algesia and hyperæsthesia, and without elevation of temperature, made easy the diagnosis of cerebral growth. The complaint of peculiar distribution of pain suggests irritation of the sensory fibres emerging from the internal capsule of each side into the crura cerebri, or, more probably, affection of one of these tracts prior to its decussation, and of the trunk of the fifth nerve prior to its exit from the cranium.*

The pituitary body, dissociated from its morphological connection with the vault of the pharynx during development, is described as a “mass of round, or oval, or cylindrical alveoli, separated by septa of vascular connective tissue concerning the purposes of which we know absolutely nothing.”† Its occasional enlargement by simple hypertrophy, new growth or inflammation, is not followed by a specific symptomatology, though recently recorded as one of the distortions of acromegaly. Frequent enlargement without this or analogous dystrophic conditions controverts the probability of ætiological relation.

In both cases there was an early irritative stage, often indicated by so slight change in mentalization as to escape notice, and lend fictitious support to the belief that the mind may remain intact when the brain is diseased. The period of excitement was followed by profound stupor, stolid, expressionless features, insensibility to psychical or physical stimulus and mental annihilation the characteristic effects of cerebral disintegration.

* See also *Report of Cases of Intracranial Tumor*, by Dr. Ross, *Brain*, Vol. III, p. 121.

† Foster, *Text Book of Physiology*, 4th Amer. Ed., p. 611.