Brain-disease of Traumatic Origin: Cases. By Wm. Julius Mickle, M.D., M.R.C.P., Grove Hall Asylum, London.*

Between the clinical features of the following cases are found differences flowing from two sources—one, the situation of the more marked changes following the injury; the other, the habitudes, tendencies, spread of, and line of action pursued by the morbid intracranial process eventually existing and dependent upon the injury.

In the first of the two cases, given below, the resultant atrophy and degeneration were more marked in the left frontal lobe than anywhere else, and some cerebro-meningeal adhesions existed over the gyrus rectus and gyrus marginalis on both sides; over the lower part of the left anterior central gyrus, and over the left insula. The atrophy of left cerebral hemisphere somewhat diffuse but chiefly of the frontal lobe—the cerebro-meningeal adhesions, mainly of orbital and marginal surfaces, and the degeneration of the left insula, were accompanied by amnesia; also, and particularly after the convulsive attacks, by a condition approximating paraphasia and (in a less degree) word-deafness, but obscured and complicated by the co-existing dementia.

The above changes had followed traumatic localized meningitis and hæmorrhage, and pachymeningitic changes; and these were sequential to a severe and destructive cranio-cerebral injury. And the symptoms are to be connected with the position and extent of the resulting lesion, and the line of action taken by the processes of inflammation, resorption, and degeneration, following that lesion. In this regard it is to be compared with the next case, with which it has close pathological links. In both cases there had been considerable chronic meningitis and more or less of resulting adhesion; to say nothing of the pachymeningitis, more marked in the first than in the second case.

This first one, therefore, quite falls into the group of cases where a form of aphasia depends upon diffuse textural change, more marked in the grey cortex of the left frontal lobe than elsewhere. Viewing the subject in its broad aspects, several examples of this group were given in detail in one part of a paper on some of the varieties of aphasia published by the present writer in the American "Alienist and Neurologist" for April, 1882. It is unnecessary to

* Read at the Annual Meeting of the British Medical Association, Cardiff.

https://doi.org/10.1192/S0368315X00014882 Published online by Cambridge University Press

recapitulate here the commentary made, and the condensed summary given in that paper as to the symptoms and lesions in cases belonging to this group. But it may be briefly noted that patients of this group retain but little gesture-language; display considerable impairment of memory and general dementia; only in a momentary and imperfect manner show any lively and appropriate emotion in response to external impressions and influences; at times utter broken words and phrases, oaths, or foul expressions; and if subject to recurring epileptiform seizures are subject, also, thereafter, to a temporary abolition of speech, or to a grave increase or modification of any already existing affection of articulate language.

In the second case, as in the first, there was some cerebral atrophy, and this, as usual, mainly or solely of the fronto-parietal lobes. The adhesion and decortication were principally about the base and mesial surfaces of the brain; portions of the orbital gyri, of the marginal gyri on the mesial aspect, and of the uncinate gyri, being the parts chiefly adherent to the meninges, and the traces of adhesive traumatic meningitis about the base being very decided.

Here, then, following the intracranial inflammatory effects of a severe cephalic injury were traces of chronic meningitis, with some atrophy of brain, and compensatory increase of serosity. The cerebrum also was involved in the original morbid process; so were the optic nerves, with gradual failure of sight.

The depressed form of emotional disturbance was unusually well-marked in this case, which is one of those forming, patho-histologically, a transition between the most typical lesion of general paralysis on the one hand, and localized chronic meningitis on the other; but congenerous rather with the former. The pathological changes, however, had soon become "diffuse." They began rather at the base, where the effects of the original injury had fallen with greatest severity, and their course may have relation to the course of the symptoms.

In this latter case, as compared with the former, the morbid process set up by injury was of a more diffuse character, spreading and extending more widely, and leading eventually to slightly indurative changes not very circumscribed or limited in extent.

The present is merely complemental to other papers on brain-disease following cephalic traumatism, published by me in the "Journal of Mental Science" for April, 1881, and

https://doi.org/10.1192/S0368315X00014882 Published online by Cambridge University Press

for January, 1883, and in the "Medical Press and Circular" of January 10th, 1883. To these the reader is referred for the discussion of various points, which need not be repeated here.

Case I.—H. W., aged 57, married, a labourer, weight 122 lbs., admitted September 1, 1883, died January 1, 1884, the mental disease for which he was admitted being stated to be the first attack, to be then of ten days' duration, and attributed to convulsive "fits." The certificate spoke (*inter alia*) of the patient's false idea that some one was under his bed, of his disinclination to answer questions, and his irrelevancy of language, and of his occasional violence of demeanour and threats to murder his wife.

It appeared that some years previously the patient sustained by accident a severe injury to the head, causing a compound comminuted fracture of the skull with subsequent loss of bone. For the fracture he had been treated in one of the London hospitals. Subsequently to this he had never been so well or capable mentally; convulsions had supervened latterly, and his mental powers had continually retrograded, but not extremely so until after a "fit" occurring ten days prior to his admission. The evidence of this severe cranial injury existed in the form of a deep depression in the skull over the course of the sagittal suture and about two inches in front of the junction of this suture with the lambdoidal. This depression was of considerable depth and capacity. There was also a scar on the vertex in front of the indentation and slightly to the left of the sagittal suture. A scar showed on the left cheek, and a blue scar on the left orbital margin.

The complexion was fresh and rosy, the skin clear, hair greyish, head large and partially bald. The patient was edentalous, except in part of the right side of the lower jaw, in consequence of which the tongue was protruded somewhat to the left, and the mouth distorted. Pupils equal, slightly irregular, rather sluggish to light only. Except for some râles, friction, and dulness of right lung, the viscera appeared to be fairly healthy; and no evidences of constitutional syphilis were found.

Several convulsive attacks occurred on the days following admission, and the patient was placed in bed. Here at times convulsive twitches played about the right upper limb, and on a few occasions convulsions, mainly tonic, affected that limb principally and the two lower limbs in less degree, the arm being rigidly thrown upwards and outwards. After the convulsions the right limbs were palsied, and the knee-jerk was defective in both legs.

When admitted, and before any convulsions occurred here, his replies were irrelevant and incoherent. A few days later there appeared to be some paraphasia and perhaps word-deafness complicating the dementia. Q.—"What is your name?" A.—"Well, I'll" (then began restlessly pulling the right hand with the left).

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Q.—"What is your name?" A.—"That do." Q.—"Where do you live?" A.—"This do" (looking at his hand). In fact it was difficult to keep his attention, or get a reply, and the replies to the simplest questions were irrelevant and fragmentary, and usually unintelligible as regards the communication of any idea to his mind. Not only so, but he understood but little of what was said to him, and that only the most simple propositions. The words addressed to him often seemed to fail to arouse the appropriate idea, and when attempting a reply those used by him were usually inappropriate and devoid of relevancy.

By the end of about a month the condition of speech had much improved. Though stupid about obeying directions, and readily misapprehending requests made, and directions given to him, he could now answer simple questions in a hesitating, broken, faltering manner; mumbling, repeating phrases, and showing considerable amnesia. Some of his replies were relevant but inaccurate, a few were both inaccurate and irrelevant. On standing he readily became shaky, tremulous.

About a month still later he was found one morning to be stupid and unable to speak. After the action of a laxative enema he was able to speak, but what he said was irrelevant and often unintelligible. Q.—"What is your name?" A.—"Um die"—or—"Jess." The mouth was somewhat drawn to the left, the right arm was paretic, the right leg less so.—From this state he soon recovered.

About three weeks before death he was taken ill rapidly. Temp. 100°, pulse 116, respiration 38, and the inspiration made in three or four spasmodic efforts, bronchial râles, some dulness and crepitation, diarrhœa, occasional vomiting, dry brown furred tongue. He improved, then died rather rapidly.

Necropsy, in abstract.—Over the sagittal suture and somewhat to its left, and extending two inches from the occipital bone, was a hole in the skull, of about the size of a silver florin piece, closed by adherent scalp, and, partially, by a fibrous membrane. Pachymeningitic changes, consisting of old thickening of dura mater, especially on the left side, and of soft, adherent but separable, hæmorrhagic, membraniform, vascular and ecchymosed formations on the left side of dura at vertex, and extending to the left anterior and middle fossæ of skull-base, and to the tentorium; while the same existed in the right middle fossa also.

Some patches of white fibroid thickening in the arteries at the base of the brain.

Old ordinary meningeal opacity, etc., of the usual distribution. Some cerebral atrophy of the fronto-parietal lobes, more marked in the left hemisphere, and particularly in its frontal lobe, the left hemisphere weighing only 18½ oz., the right weighing 20 oz.

Some cerebro-meningeal adhesions over the gyri recti and adjacent portions of the gyri marginales, and by the medium of these marginal

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gyri the two hemispheres cohered: adhesions also over the lower inch of the surface of the left anterior central gyrus and at lateral walls of the Sylvian fissure. The grey of the left insula slightly adherent to the meninges, and atrophied; also softer and more readily separating into layers than that of the right. The left orbital grey more atrophied than the right. The olfactory bulbs not much affected. Rusty staining of meninges over the inferior surface of the temporo-sphenoidal lobes.

The brain, generally, was of fair consistence.

The ependyma of the lateral ventricles, and of the fourth ventricle, was thickened and granulated.

Pons Varolii and medulla oblongata 1 oz., cerebellum 5 oz. Fluid and blood from cranial cavity 4 fl. oz.

The præcentral sulcus, especially on the right side, ran into the Sylvian fissure, and the perpendicular ramus of the latter was very short. Both parietal fissures ran into the transverse occipital except for a small gyral fold posteriorly. The occipital lobes were extremely unsymmetrical in shape, a notch on the inner side of right tip being opposed by a boss on the left.

Heart flabby, 13 oz. Some slight thickening of mitral and aortic valves. Aorta extremely atheromatous and calcareous, and in parts abraded. Coronary arteries somewhat atheromatous.

Some old scattered pleuritic adhesions in the right side of chest. Some old indurated fibroid knots about the back of right lung. In the upper lobe of left lung was a small collection of thick creamy laudable pus, the lower lobe was congested.

The kidneys were congenitally lobulate, they were slightly indurated. There was a subcapsular abscess at the summit of the left kidney, with a circumrenal abscess, and the left adrenal was apparently disorganized; peritoneum hereabouts deeply congested. Spleen firm. Curvature of spine above diaphragm. Left lung 18 oz., right 20½ oz., spleen 4½ oz., right kidney 6 oz., left 5½ oz., liver 63 oz.

Case II.—J. W. T., aged 47, married, a timekeeper, admitted October 30, and died November 18, 1883. First attack of mental disease, worse for three weeks before admission.

It appeared that the patient had sustained a very severe blow on the head by a stone in December, 1881, and therefore nearly two years previous to his admission. He was never quite himself after this. To quote from the account given of the case by the patient's wife: "Until then"—the date of the injury—"he always enjoyed good health. The place struck was in front and slightly above the left ear. The doctor said the pad of muscle there saved his life; as it was, the injury caused a slight concussion, and he was confined to his bed for three weeks, after which he seemed fairly well until the June following, when he caught a slight cold which turned to inflammation of the lungs and he was very ill for several weeks. He then [later on] attended the Brompton Hospital, and derived great

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benefit. In the following October [1882] his eyesight began to fail, his memory also; he got very nervous and restless at night, and low-spirited, and for the last three or four months he became subject to illusions [delusions] of all kinds, more particularly about money. He used to think many of the illusions were dreams. Another symptom was that he had such an increase of appetite. Previous to that he had always been a small eater; eating scarcely sufficient to keep up his strength."

The "certificate" and "statement," and persons bringing the patient to the asylum, asserted that the patient was suicidal and dangerous to others; incoherent in speech; of defective intelligence and impaired memory; that he could not tell the name of any ship he served in whilst in the Royal Navy; that he acted strangely, as, for example, in secreting trifling objects about the house and filling his pockets with coke; that he had the delusion that money had been left at his house for him; that he had been violent and unmanageable; had broken windows; had put a knife beneath his pillow; and had threatened "to kill soldiers." Also, that he had for some time been strange in manner and low in spirits.

On admission, he was placed in bed, being thin, feeble, blind or nearly so, with difficulty induced to take his food, and having a few râles in the right lung. The face was sallow and parchment-like. The pupils were dilated, slightly irregular in outline, sluggish to light, somewhat so in movements as of accommodation, and acting defectively to painful sensory cutaneous impressions; the left was slightly the larger. The forehead was corrugated and raised. Speech much impaired, mumbling, low and slow; when he was up speech was accompanied with slight labial and facial twitches, and was stumbling, stopping, and shaking; becoming mumbling, and at times unintelligible. Tongue tremulous, dry and reddish along its middle. Trembling was readily induced, and when he was standing up tremor soon invaded the whole frame. Fluids only were swallowed, there was often difficulty in inducing him to take even these, and latterly peptonized enemata were used. The gait was shaky and unsafe, partly, perhaps, owing to defective sight. He could, however, walk a few steps, but not further. Urine non-albuminous. Pulse much affected by position.

He was depressed, readily weeping; in explaining matters gave a rambling, incoherent account, or even a fragmentary and unintelligible one. He could not tell where he had been living recently, or at what working. Though laid up in bed, he said he had been all over the place to-day. He was dull and slow to understand any instruction he received, but when once started would protrude the tongue or grip with the hand as directed. He was of wet and dirty habits.

He continued to be feeble, depressed; whining, moaning, and readily weeping, timid, emotionally disturbed and distressed by trifles,

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even by being moved, fed, cleaned, or merely touched. He still swallowed badly.

Pneumonia set in, and became marked, especially in the right lung; with vomiting, refusal of food, and increased dysphagia; and death soon closed the scene.

Necropsy, in abstract, twenty-eight hours after death.—Brownish discoloration of skin. Dura slightly thickened. Considerable amount of fluid in arachnoid and subarachnoid spaces. Slight thickening of arteries at base of brain, especially of left middle cerebral.

The meningeal changes were highly marked, and slightly more so on the left side; particularly were they marked at the anterior base and about the optic nerves and interpeduncular space. Here the thickened arachnoid formed a firm bridging membrane, and strands of false membrane tied down the optic nerves and neighbouring parts. The arachnoid and pia were thick, opaque, milky, and œdematous over the anterior and middle parts of the cerebrum. In front, and at the base, were interlobar adhesions.

There were only slight adhesion and decortication—of the first frontal gyrus, gyrus rectus, orbital part of gyrus marginalis or pli de la zone externe, first, second, and third temporo-sphenoidal gyri, gyrus Hippocampi and its uncus on both sides. These changes, however, were more marked on the left orbital and unciform gyri than on the right. Slight cerebellar adhesions existed.

There was atrophy of the cerebral cortex in the fronto-parietal region, and especially in the orbital. Its grey was of a somewhat homogeneous appearance and faint slaty hue. Anteriorly the grey and white cerebral substances were firmish.

Slight thickening, induration and granulation of the lining membrane of the lateral and third ventricles; well-marked similar changes in that of the fourth ventricle. Velum tough.

Brain as removed with membranes, fluid, etc., 52 oz. Right cerebral hemisphere $20\frac{3}{8}$ oz, left 21 oz., cerebellum $5\frac{1}{8}$ oz., pons V. and med. obl. $\frac{3}{4}$ oz. Fluid and blood from cranial cavity $4\frac{1}{2}$ fl. oz.

Pneumonia; hypostatic, and more of right lung than of left. R. 43 oz., L. 31 oz. Somewhat big heart, $11\frac{3}{4}$ oz., slight coronary and aortic atheroma. Other viscera fairly healthy. Spleen firm, $4\frac{1}{2}$ oz. R. kidney $5\frac{1}{4}$ oz., two small ordinary cysts. L. kidney $5\frac{1}{2}$ oz.

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