ON THE
PHENOMENA AND APPEARANCES
FROM
PARTIAL OBSTRUCTION
IN
THE CEREBRAL CIRCULATION.

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THE great importance of the functions of the brain, and more especially the obscurity that overshadows the mode in which that organ fulfils its highest purposes in the economy, are such as must still give interest to every remark tending to throw any additional light upon its pathological anatomy.

The notes from which this present paper is taken regard two cases that fell under my notice. In the first are seen the symptoms during life, and appearances after death, peculiar to inflammation of the

large veins upon the pia mater ; in the second may be observed the inconvenience occasioned by the pressure of a large tumour, so situated as to prevent the free return of venous blood from the affected side of the head ; and in both are shewn the consequences induced by a partial obstruction to the flow of blood through the brain. In the one I shall demonstrate a particular appearance in the medullary substance of the brain, which although more than once previously met with, I had not before been able satisfactorily to explain ; and in the other, we shall have occasion to remark (and that to a very curious extent) the extraordinary powers a large artery may sometimes acquire and exert in a very infirm constitution, when labouring to drive forward the blood through the round of an impeded circulation.

CASE I.

Friday, May 30, 1828.—At the request of the physician, I examined the body of J. E. who had died in one of the medical wards of St. George's Infirmary. It appeared that she was a young woman of dissolute habits. On the 17th instant she had miscarried, although she concealed the circumstance at the time. On the 21st she was brought into the house in a chair. For the following day and night extremely weak and languid ; she complained of no pain in the head or elsewhere, but sometimes conversed with those around her. She had some thirst, with quick

pulse. There was, nevertheless, a degree of stupor about her, and this gradually increased, as well as a difficulty in articulation; so that, for several days before she died, she was unable to say a word, although repeatedly attempting to speak.

During her illness she observed to the nurse that she wanted some brandy or gin, saying, that was what she had been most used to. She frequently moaned aloud, and from the first had slight tremors, and occasional subsultus. The right side, for several days previous to her death, was completely paralytic; during which period involuntary stools passed, the effect of the medicines directed.

On the 24th considerably worse than before; her powers of utterance slow and imperfect, with little disposition to notice those about her.

On the 25th she only spoke twice, but had still some power of motion in the right leg. The 26th, silent and comatose; but on one occasion drank a little barley-water that was offered her. There were now frequent manifestations of subsultus, with catchings and distortion in the muscles of the face. She expired on the morning of Thursday, May 29.

In examining the body, the head was first inspected. Turning aside the dura mater, an appearance of thickening and opacity was seen, from inflamma-

tion of one of the large veins, traversing the middle of the right hemisphere, to its termination in the longitudinal sinus ; and every part of the pia mater from which blood was collected by the branches of this vein, was observed to be red from inflammation, and had specks of blood effused into its fine cellular texture.

On making a section of the brain, I found the cortical and medullary substance of a healthy consistence and colour, yet exhibiting a peculiar appearance, as if every capillary vessel presenting itself within a given space, was enlarged to three or four times its natural diameter. These equally enlarged capillary arteries were as equally dispersed over a given extent of surface, beyond which, as the appearance terminated abruptly, the medullary substance became at once clear and white.

I next laid aside the dura mater from the left side of the cerebrum, where from inflammation of two or three of the large veins having taken place, the changes already described had gone on to induce small effusions of blood, in minute masses, between the pia mater and brain ; and on cutting into the cerebral substance at this part, I found that here and there, the congested capillaries had apparently ruptured, depositing within the medullary substance small coagula, a few grains each in weight. These little masses of blood, effused into the left hemisphere

of the brain, sufficiently explained the more positive state of paralysis which had existed on the right side of the body.

In the thorax and abdomen, the appearances were natural.

OBSERVATIONS.

The above appearances may be regarded, I conceive, as demonstrative of the effects induced by congestion, affecting a part of the brain, from inflammation and obstruction in the trunk of the corresponding vein. The more extensively diffused effects of general congestion upon the surface, or within the substance of the brain, proceeding from various causes, have been frequently enough observed ; but the more partial consequences incident to obstruction of one or two only of the superficial veins, have been less correctly noticed.

I have presented two portions of the left hemisphere of the cerebrum, which exhibit these appearances very distinctly.

CASE II.

June 1831. Mrs. J., aged 80 years, a lady of spare and bilious habit, first consulted me in December 1818, for a tumour in the neck, which she said was

frequently uneasy, and at times pulsed with distressing violence. It followed the motions of the larynx, and appeared to be an enlargement of the right lobe of the thyroid gland. This swelling had commenced at the age of twenty-five, being, when first perceived, no larger than a hazel nut; attached apparently to the right side of the throat.

For many years she thought nothing of it, although the tumour slowly increased. I directed her to try the spong. ust.; but this remedy so disturbed the pulse and nervous system, that it was laid aside before any advantage could be derived from its administration.

June 2d, 1825. I was requested to see Mrs. J. for complaints of extreme languor and sinking, which she said, she was quite sure she could not survive, and was fretful when I expressed a contrary opinion. The tumour, at that time as large as a small melon, occupied the right side of the neck, was of a soft elastic consistence, and pretty equal upon its surface. It now lay behind the sterno-mastoid muscle, the fibres of which were somewhat spread upon its surface. The right carotid artery, pushed outwards by the tumour, might be traced passing upwards upon its external and posterior part. That vessel, and indeed all the arteries upon the right side of the neck, pulsed at times with considerable activity.

She was frequently disturbed in the night, by ex-

hausting paroxysms of a violent convulsive cough ; the effect, no doubt, of irritation or pressure from the tumour, which had for some years obliged her to sleep sitting up in bed, supported with pillows. The pulse was natural, and general health tolerably good.

May 28th, 1828. This lady's niece called to acquaint me that her aunt's complaints were worse. She now felt some difficulty in swallowing, solids especially ; the effort inducing an appearance as if, for some minutes, she was choking ; she had however no material difficulty in breathing. In the night she said, she sometimes did not know whether her aunt breathed or not ; and she had observed her in that way for half an hour together, while she was sound asleep. She generally seemed to recover by drawing rather a deep breath, and waking up a little ; but she never, on these occasions, complained of any thing, nor was at all sensible of what had happened. This state of breathing in her sleep had been occasionally observed for the last six months.

September 20th, 1830. I made a drawing of the tumour, which the patient observed had been for the last twenty years uneasy and painful, sometimes acutely so ; aching and occasionally shooting, and of late, she said, a large vessel (the right carotid artery) had acquired the habit of beating and throbbing with violent force and activity. This, I found on examination, was the fact, for that artery was pulsating with most extraordinary energy and power. The

action of the left carotid, on the other hand, was so gentle and quiet as to be scarcely perceptible, but the common trunk of the right carotid, coursing round the tumour, raised up the integuments in a bold elevated ridge.

The coats of the enlarged artery, when pressed, appeared to be three or four times their natural thickness, and the size of the vessel increased to the diameter of three-eighths of an inch.

The trachea and larynx were pressed over to the left side by the increasing volume of the tumour, which was still so closely attached as to be distinctly raised and depressed in the act of deglutition.

Monday, April 18th, 1831. Last Friday, while taking tea, she complained of being extremely giddy. This continued all the evening, and on the following morning at breakfast, she said she was less giddy, but had an unpleasant feeling in her head, so as scarcely to know what she was doing. Cutting her toast, as usual, in small bits to eat, she threw them on the carpet, and was just going to throw the tea after them, when her niece caught her hand, and prevented it. She said nothing at the time but soon recollected herself, and then observed, "I am a poor lost soul, and have quite lost my memory."

In the afternoon she seemed more cheerful, but the following night awoke in great agitation and distress,

said she was dying, and it was found that the powers of sensation and motion in the left side and extremities were lost. In a few hours these complaints partially subsided.

The following morning I was requested to see her; and by the assistance of leeches to the temples, and an active cathartic, she was, in a day or two, enabled to move again, from one apartment to another, with only one arm to lean on; while before, she had required the assistance of two. She could also use her hands better, but her head still remained, she said, as bad as ever.

July 19th. This lady died very early in the morning; and the same evening I examined the body.

In the head, between the arachnoid membrane and pia mater, there was a considerable serous effusion, most conspicuous over the right hemisphere. On gently separating the hemispheres, the corpus callosum was apparently tense; and about 3iiss. of serum were found in the ventricles; the septum lucidum being expanded and thin. The substance of the corpus callosum towards its right margin, was somewhat softer than natural; the medullary matter cut into, being found to contain several cavities or small spaces within its substance, filled with serous fluid.

I removed the tumour from the neck; and on subsequent examination found the internal jugular vein,

in company with the artery, passing round the tumour; it was now also ascertained by measurement, that although the right carotid artery was very much larger and thicker, it was not materially longer than the left; a circumstance explained by the unusual length of the arteria innominata, in this instance.

It was pretty evident that the tumour itself contained some fluid; but desirous to preserve its figure entire, I preferred immersing it in rectified spirit, without making any division of its substance, in which state it is, therefore, now put up.

In the abdomen, I was somewhat surprised to find the caput coli present itself among the small intestines upon the left side; so completely detached from its usual situation in the right side, as to be only very loosely connected by a membranous expansion to the lumbar vertebræ.

The left kidney, which had a few small vesicular appearances upon its surface, was removed. I afterwards filled it with fine injection, and in so doing, found the vermilion as well as the size return by the vein nearly as freely as it flowed in by the artery. The kidney subsequently laid open, demonstrates numerous particles of dark coloured calculous matter, deposited in the secreting structure, apparently in the tubuli uriniferi of the gland.

OBSERVATIONS.

The protracted continuance of the disease in the above case presents only that character with which we are sufficiently familiar. It is not, however, common to see the trunk of the carotid artery so displaced, as to be found directly beneath the integuments of the neck, and apparently extended so as to occupy nearly half the circumference of a large tumour. But the most unusual circumstances, perhaps, are the very peculiar increase in the size and strength of that vessel, and most especially the extreme force with which it laboured to overcome the difficulties with which it had to struggle. In these last particulars, this case affords a very rare example in illustration of a principle laid down by the late MR. HUNTER, which disposes all muscular parts to acquire increased strength and power, equivalent to any incidental difficulty or embarrassment that may arise in the performance of their functions, from the inroads of disease.

21, Saville Row,
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