ORIGINAL COMMUNICATIONS.

CASE IN WHICH TEN TUMOURS WERE FOUND IN THE BRAIN AFTER DEATH:

EXTENSIVE DEVELOPMENT OF TUMOURS IN VARIOUS ORGANS.

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S. C., a stout, well-formed, florid-looking female, aged 26, and unmarried, was seized, on November 26th, 1852, with a spasmodic affection of the respiratory organs, resembling a fit of asthma. When first seen, she was lying on her back, gasping for breath. The countenance was pale, livid, bedewed with moisture, and expressive of much anxiety; the alae nasi were greatly distended at each inspiration. There was a short dry cough, coming on occasionally in paroxysms, but without expectoration. The pulse was 85, small.

Physical Signs. The upper portion of the thorax was unusually full, rounded, and resonant on percussion. There was no depression above the clavicles. Over the lower part of the right side there was a dullish sound, apparently produced by slight ascent of the liver. Over the upper lobes there was heard a loud, rough, and very prolonged expiratory murmur, mixed with occasional sibilant râles. In the lower half of the right lung, the respiratory murmur was feeble; while, in the corresponding portion of the opposite lung, it was puerile. The resonance of the voice was every where natural. The heart's impulse was imperceptible, and its sounds weak and distant.

Of her previous history I could but gather a few particulars, derived solely from herself; and, as her intellects appeared somewhat impaired, they were of comparatively little value. She had formerly suffered from convulsive seizures, terminating in insensibility; and, during the last two years, she had likewise experienced similar attacks to that which I now witnessed. Of her family history she could give no account.

The immediate severity of the attack, depending evidently on an emphysematous condition of the upper lobes of the lungs, was soon relieved; and she ere long regained what appeared to be her ordinary state of health. After the lapse of three weeks, however, she complained of a swelling which had appeared behind and below the left ear, producing uneasiness rather than pain. It was about the size of a walnut, hard, smooth, and colourless. It appeared to be embedded in the substance of the sterno-mastoid muscle; manipulation caused no pain, and there was no enlargement of the superficial veins in the vicinity: it resembled, indeed, an indurated and enlarged lymphatic gland. Shortly after its appearance, she was observed to evince symptoms of deranged intellect, with a fatuitous expression of countenance; and ere long these symptoms became merged in a state of general insensibility, physical and moral. She lay in bed moaning, but without taking the slightest notice of surrounding objects; her eyes were open, the pupils dilated, and almost always fixed and immoveable; there was general paralysis, both motor and sensory, of the entire body, general anæsthesia of the cutaneous surface, and relaxation of the sphincters. The temperature of the body was lower than natural; the respiration slow and tranquil, though occasionally interrupted; and the pulse averaged between 80 and 90. She lay in a state of complete unconsciousness for several days, during which the tumour under the sterno-mastoid increased in size, and assumed a bluish aspect at its apex, while the surrounding veins gave indications of commencing enlargement. Its suspicious appearance now induced me to inquire of those who took charge of her, whether they had noticed any similar tumour in other parts of the body. Their answers not being satisfactory, I examined her carefully, and detected four morbid growths, one in the left mammary gland; another beneath the integuments of the abdomen, over the region of the spleen; a third in the iliac region, above the seat of the inguinal glands; and a fourth on the inner side of the left thigh, at

its lower third. The question as to the nature of these tumours became extremely interesting; not, indeed, with a view to prognosis, which was evidently hopeless, but as tending to throw some light upon the diagnosis of the case, in relation to the cerebral symptoms. Their rapid growth, and almost simultaneous origin (since they had sprung up within five weeks), suggested two theories: either they were lymphatic tumours developed in the substance of glands, or they were an example of the sudden development of encephaloid matter in different localities. The age of the patient pointed rather to the first of these hypotheses as being the true one; but her general appearance entirely belied the supposition of a strumous diathesis: and it has been proved that the encephaloid form of cancer is by no means unfrequent at this period of life.* Moreover, the tumour situated behind the ear now presented the usual appearance which precedes the sprouting of a fungus, and had become of a purplish red at its summit: the tumours situated beneath the abdominal integuments were not in the neighbourhood of glands; they were, moreover, soft, elastic, of a slightly bluish colour, and the subcutaneous veins in the vicinity were enlarged. Assuming them, then, to be of a cancerous nature, the cause of the cerebral symptoms became somewhat more explicable, upon the supposition that, from the known predilection of encephaloid disease for the brain and its membranes, one or more similar tumours had developed themselves at the base of the organ. A *post mortem* examination showed that this was really the case.

EXAMINATION OF THE BODY. The tumours which had attracted attention during lifetime were carefully removed. The one situated in the neck was found, upon a horizontal section being made, to consist of a homogeneous substance, decreasing in density from the circumference to the centre, where it was as soft as brain, and afforded, upon pressure with the blade of the scalpel, a whitish milky exudation. Its colour varied, being of a dirty white or pale yellow towards the edges, and of a dark red in the centre, the result evidently of extravasated blood; the whole tumour bearing a strong resemblance to a portion of brain in which a limited effusion of blood had taken place.

The tumour in the breast presented a similar appearance, but in a less advanced degree; those situated under the abdominal integuments and in the thigh were composed of the same cerebriform matter, having the consistence of hard, but without extravasation.

Brain. On removing the skull, the meninges were found much injected, and the superior longitudinal sinus gorged with blood; further than this, no morbid appearance was discernible. On proceeding, however, to separate the base of the brain from its attachments, a round solid mass was felt protruding from the cerebral substance, lying outside, but encroaching upon the left optic nerve. Having removed the entire organ, a similar tumour was discovered projecting from the base of the right middle lobe; each of these tumours was about the size of a small apple. Upon further examination, a third was found embedded in the substance of the pons Varolii, and encroaching upon the medulla. The ventricles contained a little fluid; and, on making horizontal sections of the brain, eight similar tumours were discovered: one the size of a billiard ball, in the grey matter of the right hemisphere; two others of the size of filberts, in the white matter of the same side; and five more of different sizes, between that of a marble and a walnut, in the left hemisphere; making a total of eleven tumours scattered throughout the cerebral mass. The larger ones, as is usual, occupied the base of the brain; and, from their multiplicity, explained satisfactorily the complicated phenomena noticed during life.

The structural composition and general characters of these cerebral tumours differed but little from those previously examined. They lay embedded in the brain, without, however, being continuous with its substance; those situated at the base escaping spontaneously. Around two of them,

* Vogel's Pathological Anatomy.

there were evidences of slight apoplectic effusion; they were all enclosed in an indefinite species of capsule of areolar tissue. They were of spherical shape, but nodular; externally of a reddish colour somewhat mottled, while internally they bore a close resemblance to the cerebral matter in which they lay embedded; some of them having a pinkish hue, while the two larger ones, situated at the base, presented a dark red colour, bordering upon purple, in the centre.

Chest. On opening the thorax, the lungs did not collapse; they were pale, exsanguine, and emphysematous; some of the sub-pleural vesicles being of large size. Not a trace of tubercle could be discovered; but the lower lobes were much congested. On removing the right lung, a large tumour, the size of a clenched fist, came into view, lying between the under surface of its lower lobe and the upper surface of the diaphragm; it was invisible when the parts were in their natural position. This tumour presented all the characters of advanced encephaloid disease, being composed of soft lardaceous matter, of a mottled aspect towards the circumference, and a central hæmatoid mass. It appeared to adhere to the under surface of the lung, and was totally independent of the diaphragm.

Abdomen. Additional tumours were here discovered. Two of these were situated in the convex surface of the liver; the one embedded in the substance of the organ causing a species of retraction* on the surface, and manifest only upon section; the other superficial, and projecting somewhat like a mushroom.† In composition and general aspect, they were identical with those found in the brain.

The last tumour discovered was in the right kidney, lying under its investing membrane, from which it was easily removed; except in being more vascular, it differed in no wise from those found in the liver.

The remaining organs were free from all appearance of morbid growth, and were in other respects healthy.

REMARKS. In this singular and interesting case, the diagnosis of tumour situated at the base of the brain, as made before death, was mainly founded on the simultaneous development of cerebral symptoms and of external tumours in different parts of the body. But for the sudden appearance and rapid growth of these latter, such a diagnosis would have been exceedingly problematical; inasmuch as, while occasionally the presence of a single tumour in the substance of the brain may be detected before death, by that mental process which the French pathologists designate "*voie d'exclusion*", the varying combinations of symptoms produced by a multiplicity of such tumours have more frequently baffled the sagacity of the diagnostician.

In the work previously quoted,‡ containing, as it does, by far the fullest account of the pathology and diagnosis of cerebral tumours with which I am acquainted, M. Lebert, under the heading "*Multiple Tumours of the Brain*", says: "The number of such cases of which I possess a record is fifteen, and I find a corresponding multiplicity in their symptomatic manifestations. What is especially remarkable, is the total absence of all cerebral symptoms in three of the cases; and it would seem that this negative phenomenon was especially met with, when the cancerous tumours resulted from an intensely constitutional malignant diathesis. With regard to the seat of the tumours in these three cases, it may be briefly stated, that in the first they were situated on either side of the dura mater, the left anterior cerebral lobe being considerably depressed. In the second, there were three cancerous growths, one in each corpus striatum, and a third in the right posterior cerebral lobe. In the third, the tumours were likewise situated on either side of the dura mater. In these two

cases the tumours had perforated the cranial vault, thus affording additional proof that such perforation tends rather to diminish than to aggravate the cerebral symptoms. In two other cases sensation alone was affected; but there was violent cephalalgia in addition, with periodic exacerbations. In one of these there were found several tumours around the falx, and one in the left hemisphere; while in the other, the upper portion of the right hemisphere, and the inferior lobe of the cerebellum, were each the seat of a cancerous growth. The senses alone were affected in the case of one individual, whose sight and hearing had been successively abolished, and in whom, after death, there were found cancerous tumours in the upper lobe of the right hemisphere, at the anterior portion of the base of the brain, and at the origin of each internal auditory meatus. In another case, where a fungoid tumour was found filling the cavity of the fourth ventricle, and a similar one compressing the upper surface of the right cerebellar lobe, there was complete loss of sensation, general and special, together with violent cephalalgia. In four cases, sensation and motion were simultaneously affected. In one, habitual headache, difficulty of deglutition, hesitation of speech, and incomplete general paralysis, were owing to the presence of several cancerous tumours in the dura mater and cranial diploe. These latter had perforated the internal table and compressed the brain. In another case, hemiplegia of the right side, accompanied by violent but fugitive pains over the whole body, with epileptiform seizures, were traced to a perforating tumour of the frontal bone, together with several others, situated upon the convex surface of the hemispheres and in the longitudinal sinuses. In a third case, an occipital cephalalgia, with paralysis of the left leg, was owing to the presence of two tumours situated in the cerebellum. In a fourth, severe cephalalgia, together with frequent convulsive attacks, could be traced to the pressure of a tumour occupying the medulla oblongata, and of another situated in the left lobe of the cerebellum. In one case, there was a partial abolition of sensation, motion, and intellect, a tumour situated on the surface of the right hemisphere, and another in the right cerebral lobe, with circumferential ramollissement, and increase of the cerebro-spinal fluid, had given rise to cephalalgia, weakening of the intellect, and general loss of muscular power, particularly on the left side, with convulsive movements of the left arm, and noisy hurried respiration, without physical evidence of thoracic disease. In another patient, in whom tumours were found occupying each lobe of the cerebellum, the prominent symptoms were cephalalgia and convulsions, with frequent vomiting and habitual indigestion. In the two last cases of the group, sensation, both general and special, motion, and intelligence, were simultaneously affected. In one, intense cephalalgia, particularly of the frontal region, tingling of the limbs, convulsive twitchings of the face, vertiginous seizures, abolition of the sense of smell, weakening of the intellectual faculties, and, towards the close, relaxation of the sphincters, with remarkable falling of the pulse (forty beats per minute), were owing to the pressure of two tumours, situated above the crista galli of the ethmoid. In the last case, two tumours were found on the surface of the pons Varolii, one of which extended to the right cerebellar peduncle, while the other involved a portion of the medulla oblongata; during life-time they had given rise to occipital cephalalgia and frequent vertigo. The left side of the body had become gradually paralysed, and this condition had been followed by frequent attacks of coma, loss of memory, loss of sight in the right eye, and lastly, by general paralysis."

The following tables by M. Lebert are, I conceive, not without interest, as serving to show almost at a glance the relative frequency and mode of combination of the symptoms resulting from cerebral tumours in general, whether single or multiple. In the first table, the symptoms are arranged with reference to the anatomical seat of the tumour. In the second, to their relative frequency and mode of combination.

* Les tumeurs cancéreuses du foie font tantôt saillie au-dessus du niveau de sa surface, tantôt celle-ci paraît comme rétractée en forme de godaou à leur niveau. Lebert, *Traité des Maladies Cancéreuses*, p. 574.

† Lorsque la tumeur, au lieu de s'étendre en profondeur, continue à s'accroître dans le tissu sous-séreux, elle forme un tubercule cancéreux saillant. Nous avons vu une fois de véritables champignons cancéreux très saillants à la surface du foie chez un chien. (*Ib.* p. 575.)

‡ *Traité des Maladies cancéreuses*, par M. Lebert, p. 733.

SYMPTOMATIC TABLE OF THE SYMPTOMS AND FUNCTIONAL DERANGEMENTS PRODUCED BY CEREBRAL TUMOURS, ARRANGED ACCORDING TO THE SEAT OF THE MORBID GROWTH.

1. Tumours of the Convex Surface of the Brain.

Derangement of motion alone	3
" sensation and motion	3
" motion and intellect	1
" sensation, general and special	1
" motion, sensation, general and special	1
" motion, sensation, and intellect	3
" motion, sensation, and digestion	1
Total	13

2. Tumours situated in the Substance of the Hemispheres.

Absence of all symptoms	1
Derangement of sensation	2
" special sense and motion	1
" motion and intellect	2
" motion, general and special sensation	1
" motion, sensation, and intellect	2
" motion, sensation, and digestion	1
Total	10

3. Tumours of the Falx Cerebri.

Absence of symptoms	1
Derangement of motion	1
" motion, intellect, and sensation	1
Total	3

4. Tumours of the Cerebellum.

Derangement of sensation	1
" sensation and motion	2
" sensation, motion, and intellect	1
" general and special sensation and digestion	1
Total	5

5. Tumours situated at the base of the Brain.

Derangement of sensation	1
" motion	4
" sensation, general and special	5
" sensation and motion	3
" sensation and digestion	1
" sensation (general and special) and motion	6
" sensation (general and special) and intellect	1
" sensation, motion, and intellect	2
" sensation, motion, and digestion	1
" general and special sensation, motion, and intellect	7
" general and special sensation, motion, and digestion	3
" sensation, motion, intellect, and digestion	1
Total	35

6. Single Tumours, with remote alteration of Cerebral Tissue.

Absence of symptoms	1
Derangement of sensation and motion	1
" sensation, motion, and intellect	2
" sensation, general and special motion, and intellect	1
Total	5

7. Multiple Tumours.

Absence of symptoms	3
Derangement of sensation	2
" the senses	1
" sensation, general and special	1
" sensation and motion	4
" sensation, motion, and intellect	1
" sensation, motion, and digestion	1
" general and special sensation, motion, and intellect	2
Total	15

TABLE SHOWING THE RELATIVE FREQUENCY OF THE VARIOUS DERANGEMENTS CONSIDERED WITH REFERENCE TO THE SEAT OF THE TUMOUR.

	Total No. of tumours.	General sensation.	Motion.	Special sensation.	Intellect.	Digestion.
Cranial tumours ..	4	2	1	1	—	—
Tumours of convex portion of brain ..	13	9	12	2	4	1
Tumours of deeper parts of brain ..	10	6	7	2	4	1
Tumours of falx cerebri	3	1	2	1	1	—
Tumours of cerebellum	5	5	2	2	1	1
Tumours at base of brain	35	27	27	26	10	6
Single tumours with remote cerebral lesion	5	4	4	1	3	—
Multiple tumours ..	15	11	8	4	3	1
Totals	90	65	63	39	26	10

Cheltenham, Nov. 27th, 1854.

AMPUTATION AT THE SHOULDER-JOINT UNDER THE INFLUENCE OF CHLOROFORM, IN A CASE OF GUN-SHOT WOUND.

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IN illustration of the truth of the remarks in a recent leading article, entitled "Chloroform on the Battle-Field", I forward the following brief particulars of a case of amputation at the shoulder-joint, performed on account of a severe gun-shot wound.

CASE. In the early part of the present year, I was requested to see a young man, aged 19 years, who had been shot through the arm by the accidental discharge of his gun. At a period of two hours after the accident, when I first saw him, he was in a state of great depression, and had not recovered from the shock which so severe an accident necessarily occasioned, for he was cold, and apparently lifeless, with a quick and scarcely to be perceived pulse.

On examining the limb, the upper end of the humerus was found extensively comminuted, and splintered to within a short distance of the joint; the soft parts around, and especially on the inner side, frightfully mangled, and with injury to the chief blood-vessels and nerves. Perceiving that amputation was required, the inhalation of chloroform to a moderate extent—twenty drops on a piece of lint—was at once had recourse to, with the effect of increasing the force and frequency of the pulse—acting, in fact, as a stimulant; and when, after a short interval, a sufficient quantity had been administered, and anaesthesia was secured by the occasional addition of ten or twelve drops, before a drachm of the fluid had been used, the operation was performed in the following manner. An incision of three inches in length through the deltoid down to the bone, so as to expose the joint, was first made; the knife was then made to pass obliquely downwards and outwards, for the flap had to be principally formed from the outer and upper part of the shoulder, on account of the injury inflicted on the inner side; the joint was then opened, and the knife made to pass behind the head of the bone, which was readily accomplished, for the muscles were in a state of relaxation, although the loss of the power of throwing the head of the bone out of its socket, from the lower part of the humerus being separated from the upper, rendered this portion of the operation more difficult than if the bone had been intact; the instrument was then made to cut its way out from without inwards, at which period the subclavian artery was compressed by a professional friend. Two arteries only required the ligature—the axillary and another; and these