A CASE OF CEREBRAL TUMOUR.

CLINICAL RECORDS.

A CASE OF CEREBRAL TUMOUR: GLIOMA OF THE CENTRUM OVALE.

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(CASE II.)

Case.—Kuth S., aet. 38, was admitted under my care at the Ancoats Hospital, Manchester, on 29th August 1901, suffering from hemiplegia.

History.—About six months previous to admission to the hospital, the patient had commenced to suffer from headache and vomiting. Three months later she had a miscarriage. Soon afterwards, about nine weeks before admission to the hospital, the left leg became weak. It was noticed that she dragged the left leg in walking; and the loss of power in this limb gradually increased, until, at the end of a week, she was unable to walk. At first the left arm was not affected, but about two weeks after the paresis of the left leg was first noticed, the left arm also became affected. The paresis of the left leg and arm steadily increased, and about four weeks before admission to the hospital the patient's husband noticed signs of facial affection. During the progress of the paralysis the headache increased, the patient became very drowsy; she vomited occasionally, but there were no convulsions. The patient had taken alcohol freely, and there was a history of five miscarriages. Her husband was quite sure that the left-sided hemiplegia had developed gradually, and that the left leg was affected first, then the left arm, and finally the face.

On admission to the hospital the patient was in a drowsy condition, but could be roused to answer questions. There was left-sided hemiplegia—the face, arm, and leg being paralysed on this side. The limbs were flaccid; the knee-jerks were present; there was no ankle clonus. Owing to the mental condition, a careful examination of sensation was not possible. The patient was, however, able to feel a pin-prick quite well on the paralysed side, and was also able to recognise coarse tactile impressions. There was no paralysis of the ocular muscles. The optic discs were normal. The examination of the circulatory and respiratory systems revealed nothing abnormal. The urine was passed into the bed, and it was only possible to obtain a small specimen for examination on one occasion. It contained a small amount of albumin.

Whilst the patient was in the hospital she suffered much from headache, but there were no convulsions. Optic neuritis did not develop. The optic discs were last examined two days before death, and were then quite normal. The drowsiness gradually increased, and the patient died comatose on 7th September 1901.

Autopsy (abstract).—The cerebral meninges and surface of the brain presented no noteworthy changes. The pons, cerebellum, and medulla appeared normal to the naked eye. On making vertical transverse
sections of the cerebral hemispheres, a large tumour was found in the white matter of the right cerebral hemisphere, *i.e.* in the right centrum ovale. The growth had the colour, appearance, and consistence of the grey matter of the cerebral cortex. It could not be washed away or broken up by a stream of water; it was not broken down by pressure of the finger more readily than the surrounding brain tissue. The tumour was separated from the cortical grey matter by a thin layer of white matter. It extended beneath the whole of the motor region of the cortex, but it only slightly invaded the white matter of the pre-frontal region, and did not extend to the occipital lobe. The basal ganglia and internal capsule were not invaded by the growth. A narrow zone of white matter separated the growth from the basal ganglia. From the naked-eye appearance the growth was thought to be a glioma. The spinal cord appeared normal to the naked eye.

The heart, lungs, and liver were normal. The kidneys were rather small. The cortex was much diminished in breadth.

**Remarks.**—The chief points of clinical interest in the case were: (1) The situation of the growth, just in the middle of the white matter of the right cerebral hemisphere, *i.e.* in the middle of the right centrum ovale. (2) The absence of convulsions. (3) The absence of optic neuritis. (4) The gradual onset of the paralysis.

The absence of convulsions was due to the cortical grey matter being unaffected. The gradual onset of paralysis, beginning with paresis of the leg, and then steadily increasing and affecting the arm and face, is characteristic of the paralysis produced by cerebral tumour. Even in the absence of optic neuritis, paralysis gradually developing in this manner is strongly suggestive of cerebral tumour.

The most interesting feature of the case was the *microscopical* appearance of the tumour. It may be briefly described as a glioma rich in large cells. It corresponded in structure with a number of the tumours which have been described as neuroglomata or ganglionic neurogliomata, on account of the large cells, found on microscopical examination of these tumours, having some resemblance to nerve cells. These large cells have been supposed to be derived from nerve cells. But this is a point which has been recently much disputed, and it appears to the writer to be better to describe such tumours as gliomata rich in cells of the large cell type.

Sections were stained with logwood, eosin, aniline blue-black, and according to Weigert's and Van Gieson's methods. But the processes of the cells and the neuroglia fibres were best seen when the sections were first stained with logwood, then for forty-eight hours in a strong solution of aniline blue-black in weak alcohol, and, after dehydrating in absolute alcohol, for twenty-four hours in a deeply-coloured solution of eosin in creosote.
Microscopically, the tumour consisted of cells with an intervening network of fine neuroglia fibres. The structure was that of a glioma; but whilst many of the cells resembled the small cells of the common form of glioma, on the other hand, many were very large and varied in shape. The following were the forms of cells observed:—(1) Small glial cells, possessing one well-stained nucleus, which was surrounded by a narrow rim of protoplasm. (2) Large spindle cells, with an oval or oblong nucleus and a long process at each end. Sometimes these processes were undivided, sometimes bifurcated; often the spindle cells were of very great length. (3) Large cells with several or many processes. The protoplasm and nuclei of these cells stained very feebly by logwood and aniline blue-black (specimen hardened in alcohol). But the whole cell stained deeper than the other cells with Van Gieson's stain (see Plate II. Fig. 2). These cells appeared somewhat similar to ganglionic nerve cells, but examination under a high power of the microscope showed that they resembled closely very large neuroglial "spider" cells. (4) A striking feature of the tumour was the presence of numerous very large cells, with granular protoplasm, and one or two nuclei, which stained deeply. Some of these cells were more or less roughly round or oval in shape, and appeared to have no processes; many were irregular in shape, and possessed slight angular projections in their outline; others possessed a thin, slightly curved process; and others had a tapering, tail-like process (see Figures). In addition, there were many cells intermediate in size between the very large cells and the small glial cells, and often these intermediate cells had short tail-like processes.

Many of the cells of the group (4) somewhat resemble the form of neuroglia cells described by Ford Robertson¹ as mesoglia cells (a resemblance suggested to me by Dr. Orr). As the cells were not stained by the platinum method, I cannot say whether their processes branched dichotomously or not.

A case in which the microscopical appearances of the tumour were similar to those just described, has been carefully reported by Thomas and Hamilton,² and others are on record.

DESCRIPTION OF PLATE II.

Fig. 1.—Section of tumour and separate cells stained with logwood and aniline blue-black.
Fig. 2.—Section of tumour stained according to Van Gieson's method.
Fig. 3.—Separate cells stained with logwood and eosin.
Fig. 4.—Separate cells, Zeiss 1/2, stained aniline blue-black, logwood, and eosin.

¹ W. Ford Robertson, "Text-Book of Pathology in relation to Mental Diseases."
² Thomas and Hamilton, Journ. Exper. Med., New York, 1897, vol. ii. p. 635.