Long-Term Postoperative Survival in Two Cases of Glioblastoma Multiforme

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There have been many clinical and pathological studies that have included the glioblastoma multiforme.1-4,6,9,10 To date we have found no account of a patient with histologically proven glioblastoma multiforme who has survived more than 14 years.6 Roth and Elvidge3 reported on 480 cases of intracranial glioblastoma followed at the Montreal Neurological Institute during the period from 1928-1953. There was a total of 24 patients who survived 5 years and more; the operations were carried out by various members of the staff and were usually followed by roentgenotherapy. Of these 24 patients, 12 survived 5 years, 9 survived 73 months, and 3 survived more than 10 years. The present report deals with 2 of the latter patients; a 3rd patient is one in whom the diagnosis is less conclusive, the tumour being classified as malignant glioma.

Case Reports

Case 1. 61-143, T.D., a 30-year-old right-handed woman, was first admitted to the Montreal Neurological Institute on Oct. 9, 1941. At that time she complained of failing vision for 1 year, and severe generalized headache associated with vomiting, insomnia and nervousness for 3 weeks. There had been no history of cerebral seizures. The familial and past history was noncontributory.

Examination. She was a well-developed woman, cooperative and alert, with decreased visual acuity bilaterally and early papilledema. No other abnormal neurological signs were found.

Plain films of the skull showed some calcification in the right inferior frontal region. Ventriculography (Figs. 1 and 2) 2 days after admission showed an extreme displacement of the lateral and 3rd ventricles with the septum pellucidum shifted 12 mm. to the left of the midline. The patient had 2 major seizures after injection of 2 amounts of 13 and 16 cc. of oxygen within the left ventricle.

Operation. A right frontoparietal osteoplastic craniotomy was performed immediately following ventriculography. One cm. below the cortical surface in the midfrontal region, a greyish, soft necrotic tumour was encountered which filled the larger portion of the right frontal lobe expressly in its central region. A radical removal of tumour was carried out by one of us (A.R.E.). The tumour extended as far as the subependymal region of the lateral ventricle, medially to the midline and close to the anterior part of the 3rd ventricle. Otherwise there was a large margin of normal-appearing brain. Following excision of the tumour, a frontal lobectomy was carried out.

Pathological Examination. Grossly the tumour consisted of a single soft mass of greyish, necrotic gliomatous tissue, weighing 18 gm. and measuring 4.0 X 4.0 X 4.0 cm. One surface was smooth and covered by brain substance, the other was raw and covered by yellowish, friable and gelatious tissue. On the cut surface there were several large, hemorrhagic, grey and soft yellowish areas.

Microscopy (Fig. 3) revealed many large multinucleated giant cells, many polar spongiosal blasts and astroblasts, and less differentiated glial forms. Mitotic figures were present. There was considerable necrosis and some endothelial proliferation. Pathological diagnosis: glioblastoma multiforme.

Course. During the first 2 postoperative days the patient had several focal cerebral seizures involving the left side of the mouth. She was confused, talkative and uncooperative for the first 10 postoperative days. However, there was gradual improvement and at the time of discharge her mental state approached normal. The patient did not receive roentgenotherapy.

Following discharge from hospital, the patient had 5 subsequent admissions, 8 to the Royal Victoria Hospital: 1. In April 1945 for childbirth (first child 1947). 2. In October 1948 for childbirth. 3. In May 1952 because of hypertensive cardiovascular disease, anterior myocardial infarction and pulmonary edema. 4. In July 1960 to the Montreal General Hospital for cholecystectomy. 5. In January 1961, 20 years after operation, the patient was readmitted to the Montreal Neurological Institute with the complaint of fatigue and weakness of the right arm and leg of 2 months' duration, ipsilateral to the side of removal of the tumour. Apart from occasional headaches, this was her first neurological symptom following discharge from hospital in November 1941. On further questioning she described this weakness as numbness which started in her right hand and gradually extended up to her forearm. Two weeks after the onset, she began to have nagging pain in the right shoulder and chest and described electric shock-like feelings beginning in the right toes. These shock-like feelings later involved the right leg and right shoulder. They would awaken her at night and the patient would feel as if her whole right side were shaking or jerking, yet it was not.

Examination revealed the patient to be cooperative, oriented and talkative. She had decreased sense of smell on the right side and decreased visual acuity bilaterally.

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The visual fields were full to confrontation. The optic discs were well-outlined with no evidence of papilledema. The remainder of the cranial nerves were intact. There was no obvious objective weakness of the extremities. The deep tendon reflexes were slightly hyperactive on the right. The plantar responses were flexor bilaterally. Coordination and sensory responses were within normal limits.

Roentgenograms of the skull and cervical spine revealed no significant abnormality. Electroencephalography suggested slight residual cerebral damage over the right temporal and right lateral frontal region.

Because of the transient nature of the complaints, which had practically disappeared after 5 days of hospitalization, a clinical diagnosis of vascular insufficiency of the left cerebral hemisphere was entertained. No objective evidence of recurrence of brain tumor was found. The patient was discharged to her home. In October 1963 she returned for an office visit and, apart from nervousness, was essentially asymptomatic.

Case 2. 47-12448. I.T., a 19-year-old left-handed man, was admitted to the Montreal Neurological Institute on Aug. 14, 1947 because of recurring attacks of numbness on one or the other side of the body, mainly the right, of 10 months' duration. Ten weeks prior to admission these attacks were associated with left frontal headache, which lasted from a few minutes to 1 to 2 hours and were described as sharp, penetrating and piercing in nature.

Examination revealed papilledema of the left optic disc and a right homonymous hemianopsia. The patient.

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Figs. 1 and 2. Case 1. (Left) Anteroposterior projection of ventriculogram demonstrating marked displacement of right lateral ventricle and 3rd ventricle to the left. (Right) Right lateral projection of ventriculogram demonstrating posterior and upward displacement of right anterior horn.

Fig. 3. Case 1. Low-power photomicrograph demonstrating pleomorphism, tumor giant cells, necrosis and streaming of cells around blood vessels. Haematoxylin, phloxin and safranine, X150.