Preoperative Hormonal Treatment in Cases of Cerebral Tumor

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Various authors have noticed the effects of cortico-adrenal therapy in certain cases of cerebral tumor. However, the results observed with delta-cortisone or dexamethasone were not satisfactory enough for their systematic use. It was necessary to establish with some precision a more complete understanding of the means and mechanisms of action of the cortico-adrenal hormones, in order that the cases could be selected and the appropriate therapy applied. For this purpose, we made use of the most recent knowledge concerning the central hypothalamopituitary control of the hydroelectrolytic metabolism and we were able to standardize an endocrinologic treatment which generally has a favorable effect on the clinical symptomatology of patients suffering from cerebral tumor. We have already dealt with the postoperative effects of this treatment. We should like also to show the advantages of this method in preparing patients for surgery, in cases other than of tumors of the pituitary in which classical corticotherapy has already proved its worthiness.

Choice of Patients

The use of this treatment has become almost routine in patients on whom we have operated, in particular those with meningiomas and glioblastomas, diagnosed by neuroradiological and gamma-encephalographic examinations. Cerebral metastatic tumors caused by a visceral cancer in male patients, and spontaneous intracranial hematomas also can be treated suitably by this method. Further on, we shall give statistical figures on 31 cases, and a detailed report of the observations in 4 cases in which a preoperative electroencephalographic study had been carried out.

Received for publication March 8, 1963

Technical Procedure

The treatment consisted of:

1) ACTH: 50 units (150 new units) via intravenous perfusions over 16 hours; every day up until the surgical operation.

2) Cortisol: 30 mg. orally, or hemisuccinate (25 mg. every 12 hours) if the patient was unable to take anything by mouth, every day up to the day of intervention.

3) Postpituitary extract: we used a total extract of posterior pituitary body (Posthypophyse Polyvidone®), in a form that has a delayed action, in a dose of 3 units per day, by intramuscular injection. These injections were given 5 days out of 7 up to the day of operation.

If the patient was able to be fed orally, he was given a diet that included NaCl (2 gm. per day). If he was in a state of coma, we prescribed 1.5 liters of water per 24 hours together with 2 gm. of NaCl and 2–3 gm. of KCl.

In cases in which the patient had suffered from insufficient intake of water, it was necessary to correct this defect first until the osmolar condition of the plasma returned to normal. However, it was sometimes possible to start the hormonal treatment simultaneously. The reasons that led us to adopt the combination with the hormonal treatment are given further on.

Cases

Case 1. L.S., aged 33 years, was admitted on Dec. 16, 1961 with intracranial hypertension. During the previous 3 months the patient had complained of an increasing asthenia and headaches which lately were accompanied by vomiting. He was found to be in a state of stupor and semicoma, and on examination it was noted that, in addition to a paralysis of the right 6th cranial nerve, there was a right Babinski's sign. Also there was bilateral papilledema. Left carotid arteriography revealed the presence of a space-occupying lesion in the left frontal region.
A standard course of hormonal treatment was prescribed from December 16 to 26, and, after a few days, the state of consciousness was improved considerably. On the electroencephalogram of Dec. 19, 1961, a delta polymorphic activity was noted in the left frontal region, also considerable monomorphic activity spreading to this region, and a posterior bilateral delta rhythm. On December 23, the latter two types of activity had disappeared (Fig. 1).

A left frontal metastatic tumor (an epidermoid metastasis probably of pulmonary origin) was removed surgically on December 24, the brain tissue being edematous.

The patient left the Department in good condition on Jan. 19, 1962, his only symptom being slight aphasia.

Comment. Case 1 showed preoperative regression of intracranial hypertension (following 7 days of treatment) in a patient suffering from a frontal metastasis.

Case 2. E.S., aged 67 years, was admitted semicomatose on Oct. 10, 1961. The onset of the disturbances had occurred 1 month previously, following which she had had a progressive right hemiplegia interrupted by Bravais-Jacksonian fits involving the same side. The state of somnolence became more pronounced although the patient tried to reply to loud verbal instigations.

The gamma-encephalogram showed the presence of a lower left rolandic focus resembling a glioma. Two electroencephalograms were taken, one before and one after two days of hormonal treatment and a definite clinical improvement in the state of consciousness was observed (Fig. 2: Oct. 12 and 14).

Surgical intervention was postponed in view of the doubtful postoperative prognosis, and the patient was transferred to a medical ward. She returned to the Department on Oct. 10, 1961 with marked deterioration in her condition, the right-sided hemiplegia being complete and the coma deeper. Once more the beneficial effect of the standard hormonal therapy was evident. On November 2, the coma had lessened sufficiently to enable the diagnosis of a distinct Wernicke's aphasia to be made; from the electroencephalographic point of view, the improvement was shown on the graph (Figs. 2 and 3). The treatment was stopped on November 4, and the patient again sank into a state of coma with total hemiplegia. Again revival was obtained when endocrinologic therapy was prescribed on November 10.

Operation on November 11 enabled the partial removal of a large rolandic tumor on the left side, which proved to be a glioblastoma.

The postoperative course was satisfactory and the patient left the Department in good condition, conscious, but with a hemiplegia.

Comment. Case 2 is an observation of experimental value. A patient suffering from a glioblastoma was revived from a state of coma by means of hormonal therapy, falling back into coma again as soon as the treatment was stopped on 3 different occasions.