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Prospective Electroconvulsive Therapy in a Delusional Depressed Patient with a Frontal Meningioma

A Case Report

The prospective, successful, use of ECT in a patient with a frontal meningioma is described. The authors review the literature on ECT in patients with brain tumours, and suggest factors predictive of a favourable outcome.

The presence of a brain tumour has been considered an absolute contraindication for the use of ECT (Kalinowsky *et al*, 1982; Taylor *et al*, 1985; Gaines & Rees, 1986). A review of the literature, however, reveals only a few published reports, which often present conflicting results. We were recently asked to consider a course of ECT in a patient with a defined frontoparietal meningioma. She had not responded to pharmacotherapy, and gave a past history of suicidal gestures, significant deterioration in her physical condition (e.g. an 18-kg weight loss), and the likelihood that she would spend much of her remaining life in a long-term institutional setting if left untreated.

Dressler & Folk (1975) found the use of ECT life-saving in a patient with severe depression and metastatic carcinoma to the brain. Maltbie *et al* (1980), after reviewing the literature and adding seven additional retrospective cases, reported a 74% overall morbidity and a 28% 1-month mortality rate for patients with brain tumours who received ECT. They also reported a 21% success rate without complication. In most reports, the presence of the brain tumour was unsuspected at the time of treatment. Dubovsky (1986), in a systematic review of ECT in patients with neurological disorders, concluded that ECT is relatively safe in patients with brain tumours, and should be considered in patients who are at high risk of self harm and/or are grossly negativistic. A similar conclusion was reached by Hsiao & Evans (1984), who reported the successful treatment with ECT of a patient with a left parietal meningioma. The same patient was treated again with ECT after craniotomy and removal of the tumour. Hsiao *et al* (1987) restated their optimistic position in a review of ECT and neurological disorders. In contrast to the categorical injunction that ECT is absolutely contra-indicated in the presence of a brain tumour, a more moderate view is developing, to consider the risk–benefit ratio in individual cases (Fink, 1988). In this regard, we present a detailed description of our experience in the successful prospective use of ECT in a patient with a left frontoparietal meningioma.

Case report

Mrs T, a 75-year-old with a 50-year history of recurrent delusional depression, first manifested signs and symptoms of depression at the age of 20. At age 62, she was successfully treated with ECT for an episode of delusional depression. She had then done well until approximately 6 months prior to admission, when she developed depressive mood, decreased appetite, an 18-kg weight loss, sleep disturbance, agitation, anhedonia, and the recurrent delusion of acquiring syphilis as a young girl, and now having an incurable disease, which she had spread to her family.

Mrs T was admitted to a local hospital, and after an initial evaluation, ECT was considered. Examination at that institition, which included computerised tomography (CT) of the head, revealed a 3 × 3-cm left frontoparietal meningioma. ECT was deferred and she was treated with the combination of an antipsychotic and a tricyclic antidepressant. She improved somewhat and was discharged home in July 1986 (aged 74), but she decompensated rapidly, and she was admitted to a second institution. Combination antipsychotic and tricyclic antidepressant therapy was again tried, without success. On 26 November 1986, Mrs T was referred to our institution for treatment.

Upon admission, she expressed feelings of helplessness, hopelessness, and fear that she and her family would be taken away to a 'pit' for incurables with 'VD'. Her mood was dysphoric and her affect was constricted and restricted. She exhibited psychomotor retardation but denied hallucinations or suicidal thoughts. Her mini-mental (Folstein *et al*, 1975) and Hamilton Rating Scale for Depression (HRSD) (Hamilton, 1967) scores were 24/30 and 31 respectively.

On physical examination, she exhibited moderate hypertension. Her fundi were normal without signs of papilloedema. On laboratory tests, moderately elevated blood urea, nitrogen, and creatine, and an iron-deficiency anaemia were noted. Studies of her thyroid-function gave results within normal limits. Her cortisol levels were 23 and 9.3 ng/dl at 1600 h and 2300 h respectively after dexamethasone (1 mg) the night before. Her ECG was suggestive of an old anterior septal-wall infarct, but she was without signs of cardiac decompensation. CT of her head, with and without contrast, confirmed the presence of a 3 × 3-cm left frontoparietal meningioma. There was no evidence of surrounding oedema. The results of other studies, including mammography, ultrasound of the kidneys, and X-rays of thoracic spine and chest, were consistent with her age. A neurosurgery consultant

concluded that the patient was currently asymptomatic, and the lesion silent. Considering the high morbidity and mortality associated with the surgical removal of such a lesion, surgery was not recommended.

A third trial of pharmacotherapy, with a combination of nortriptyline (75 mg daily, with blood levels of 120–150 μg/litre) and perphenazine (24 mg daily) was instituted. After 1 month of treatment, there was no improvement in either her psychosis or depression. Her case was discussed at a problem-case staff conference, where the consensus was for a trial with ECT. After a discussion of the risks and benefits of treatment with ECT, non-treatment or continued pharmacotherapy, the patient and family consented to treatment with ECT. A lumbar puncture was performed prior to initiating the first treatment. An opening pressure of 160 mm with normal cerebrospinal (CSF) fluid dynamics to increased abdominal pressure were recorded. Serology, cultures, and cell counts were normal.

ECT treatment

The patient received eight bilateral ECT treatments with brief-pulse currents. For each treatment, 5% dextrose was infused intravenously, and ECG and heart rate were monitored continuously. Anaesthesia was induced with methohexital, and muscle relaxation with succinylcholine. The patient was oxygenated by face mask with 100% oxygen. Seizure duration was monitored by both Cuff and EEG methods (Fink & Johnson, 1982). Her blood pressure was recorded prior to, and immediately after, termination of the electrical stimulus, and each minute thereafter. Her hypertension was controlled with a trimethaphan camsylate drip. As seizure durations were short at the maximum currents available, durations were increased by infusions of either pentylenetetrazole or caffeine sodium benzoate for treatments four to eight (Fink, 1979; Shapira *et al*, 1985). Seizure duration (by Cuff method) and the maximum blood-pressure response during each treatment are listed in Table I. The methodology described above is the standard practice in our clinic. We were however, more aggressive in controlling the seizure-induced hypertension in this patient than usual.

Recovery following each treatment was carefully monitored and essentially uneventful. No neurological or other changes in her physical condition were revealed by examination. The day following the first treatment, the patient questioned the validity of her delusion for the first time since admission to hospital. By the fifth treatment, her mood was euthymic and her affect significantly less restricted and constricted. Her HRSD score was six, and mini-mental score, 24/30. After the eighth treatment, neither her depression nor delusions remained, and her HRSD score was two and mini-mental score, 27/30. After spending time with the patient both in and out of the hospital environment, family members reported the patient had returned to her premorbid level of functioning and requested that she be discharged home. A repeat CT scan performed 1 week following the last ECT treatment revealed no discernible changes as compared with the pre-ECT scan. She was discharged on perphenazine (4 mg per day). A 3-month follow-up examination of the patient's progress demonstrated no deterioration in mood, affect, or level of functioning. This was confirmed by her family.

Discussion

The use of ECT on patients with brain tumours is laced with controversy. Although the literature generally identifies the presence of a brain tumour as an absolute contraindication to ECT, our experience encourages the view that these cases need individual assessment. Treatment of patients with space-occupying lesions with ECT is a feasible alternative to a prolonged, incapacitating psychosis. The injunction of 'absolute contraindication' to ECT in the presence of a brain tumour should be reconsidered. The decision to proceed with ECT in this case was based on several factors that were suggestive of a favourable outcome (Maltbie *et al*, 1980). These included CSF pressure within normal limits, an absence of oedema in the tissue surrounding the meningioma as seen on CT, the absence of headache, the absence of signs of an organic mental syndrome, a negative neurological examination, and a history of prior psychiatric illnesses with successful ECT.

TABLE I

Treatment number	*Methohexital (mg)*	*Succinylcholine (mg)*	*Caffeine sodium benzoate/ pentylenetetrazole (Metrazol)*	*Maximum blood pressure*	*Seizure duration(s)*[1]
1	80	60	—	220/120	22
2	80	50	—	180/120	23
3	80	50	—	160/90	23
4	80	50	Pentylenetetrazole 500 mg	120/80	36
5	80	50	Pentylenetetrazole 600 mg	140/70	38
6	80	50	Caffeine Na benzoate 500 mg	200/100	22
7	80	50	Pentylenetetrazole 600 mg	180/90	34
8	80	60	Pentylenetetrazole 600 mg	140/100	35

1. By Cuff method.

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The presence of a brain tumour placed this patient in a high-risk category, but present methods of administration, with continuous monitoring of CNS and cardiovascular parameters, encouraged our use of ECT in a patient with an uncomplicated intracranial mass lesion.

Following submission of this paper, Fried & Mann (1988) published a similar report describing the successful prospective treatment with ECT of an 85-year-old man with two meningiomas.

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Spectrum Concept of Neuroleptic Malignant Syndrome

Although neuroleptic malignant syndrome (NMS) was initially thought to be a rare, idiosyncratic complication, the incidence estimates have been rising over the years. A part of this increase can be explained on the basis of an over-inclusive definition of NMS. The unitary concept of NMS has been challenged recently and a spectrum concept has been enunciated on the basis of findings of retrospective chart-reviews which have used too broad a definition of NMS. The authors describe three cases of neuroleptic-related toxicity with different clinical presentations which appeared in a manner apparently supporting the spectrum concept. They discuss this controversial concept critically, however, and caution against its overzealous use in routine clinical practice owing to its far-reaching clinical implications.

Neuroleptic malignant syndrome (NMS), a rare, idiosyncratic and potentially fatal complication of neuroleptic treatment, is characterised by muscular rigidity, hyperthermia, altered consciousness and autonomic disturbance associated with leucocytosis and elevation of serum creatine phosphokinase (CPK) levels (Caroff, 1980; Guze & Baxter, 1985*a*; Levenson, 1985; Shalev & Munitz, 1986). However, certain aspects of the definition of NMS remain controversial, and different diagnostic criteria have been suggested by different authors (Caroff, 1980; Guze & Baxter, 1985*a*; Levenson, 1985; Addonizio *et al*, 1986; Pope