synergistic effect of carbamazepine, lithium carbonate and fluoxetine or delayed response to lithium augmentation (Pope *et al*, 1988). Our patient failed to respond to a six-week trial of fluoxetine 40 mg orally per day but showed dramatic improvement with the addition of L-triiodothyronine.

Possible explanations for this patient's antidepressant response include a delayed response to fluoxetine, but the temporal association with the starting of L-triiodothyronine and the patient's dramatic improvement suggests that L-triiodothyronine contributed significantly to the antidepressant response. Possible mechanisms of L-triiodothyronine augmentation include a correction of chemical hypothyroidism, since even though the hormone levels are in the euthyroid range they may be low for that particular patient (Extein *et al*, 1988), or potentiation of down-regulation of beta adrenergic receptors by fluoxetine (Byerley *et al*, 1988).

This report suggests that the usefulness of thyroid hormone augmentation is not just limited to tricyclic antidepressants but could be tried with fluoxetine non-responders. This is particularly important given that fluoxetine is one of the commonly prescribed antidepressants in the United States.

We feel that double-blind placebo-controlled studies are warranted to further document the efficacy of thyroid hormone augmentation of fluoxetine.

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Continuation Electroconvulsive Therapy: Preliminary Guidelines and an Illustrative Case Report

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Despite renewed interest in ECT as a continuation treatment after an episode of depressive illness, few guidelines for its use are available. Meaningful research findings are few, although the potential benefits and risks of modern continuation ECT merit study. We suggest preliminary guidelines and provide an illustrative clinical example.

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Prophylactic or maintenance electroconvulsive therapy (ECT), now more commonly known as continuation ECT, is ECT given after recovery from a mental illness with the purpose of preventing relapse (Geoghegen & Stevenson, 1949). The introduction of effective antidepressant drugs and later lithium carbonate led to a marked reduction in the use of

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ECT as continuation treatment. Another more controversial reason may be a concern that excessive traditional ECT can result in a dementia-like syndrome (Regestein *et al*, 1975). It is now generally assumed that continuation ECT is rarely used, and most postgraduate textbooks of psychiatry make no reference to the treatment, let alone offer any guidelines as to its use. However, Kramer (1987) found that continuation ECT is used more often in contemporary practice than most authors of psychiatric textbooks suggest.

Much of the research literature dates from the early days of convulsive therapy (see review by Abrams, 1988) and is of little relevance to contemporary psychiatry. Most reports are still anecdotal or retrospective, and there have been no randomised studies in which the efficacy of continuation ECT was compared with continuation antidepressant drug therapy or lithium. We do not advocate the increased use of continuation ECT, but present our preliminary experience and suggested guidelines for interested clinicians.

Case report

A 67-year-old widow was admitted to the hospital in April 1987. She was suffering a recurrence of a unipolar depressive illness after the admission of her 40-year-old son to hospital. She was agitated in behaviour, and both anxious and depressed in mood. She denied suicidal thoughts on admission, but later drew a bread-knife across her throat. She ruminated on her failings and believed these were referred to on the television and wireless. She believed there was a conspiracy to do her harm because of all the "dirty awful things" she had done in the past; she said she was a "dirty bitch". She denied any abnormal experiences and her orientation was full.

There was no family history of psychiatric illness. Her emotional and physical development had been unremarkable. She married when she was 21 years old and had one son with whom she lived. Her only significant physical ailment was hypothyroidism for which she took thyroxine.

She suffered her first psychiatric illness in 1959 when she was 39 years old – a 'severe agitated depression', which followed the death of her elder sister. She took an overdose of sleeping tablets, but made a full recovery after a course of 12 bilateral ECT. Over the next 28 years she suffered four episodes of depressive illness, usually precipitated by a death in the family. Each episode took the form of a psychotic depressive illness and each was associated with either self-poisoning by drugs or gas, or self-inflicted bodily harm. Typically these episodes of illness responded fully to bilateral ECT, but not antidepressant drugs even when supplemented by neuroleptic drug therapy. Upon recovery after ECT, she received continuation treatment with a combination of antidepressant (usually nortriptyline) and a neuroleptic drug, and experienced full social recovery.

After the index admission she refused to have ECT. She tolerated no more than 40 mg nortriptyline daily because of dizziness. The nortriptyline was changed to amitriptyline up to 150 mg daily, supplemented by trifluoperazine 5 mg b.d. Alterations to her drug treatment were attempted, but compliance was a problem. In August 1987, she agreed to a course of ECT. She was right-handed and received 12 right unilateral ECT to no avail. She remained depressed, suspicious and still had suicidal ideas. In November 1987, she agreed to a further course of ECT and had eight right unilateral treatments to no avail; however, she responded subsequently to four bilateral ECT. She remained on amitriptyline 150 mg daily and trifluoperazine 5 mg b.d., but became depressed and suspicious within three weeks of ECT in March 1988. She remained an in-patient, but was uncooperative with attempts to modify her drug treatment.

In February 1989 she agreed to three further bilateral ECT to which she responded well. Thereafter she agreed to have regular continuation treatment with ECT. She then had two bilateral ECT one month apart. About 12 days after the second treatment, she became withdrawn and irritable. The frequency of treatment was increased to fortnightly, and remained so for the next 18 months. Treatment was given by an Ectron CCX Series 3 ECT machine, using bilateral electrode placement at a stimulus intensity of 275–375 mC. Every treatment led to bilateral tonic clonic muscle activity lasting from 21–32 seconds (excluding stimulation time).

In November 1989 she was well enough to be discharged from hospital to a private nursing home. Her continuation drug treatment had been reduced to nortriptyline 50 mg daily and trifluoperazine 5 mg *nocte*; the trifluoperazine was discontinued later. She continued to receive fortnightly ECT as an out-patient. Her fast on the night before ECT was supervised by the care assistants at the nursing home, she was accompanied to the hospital by a nursing assistant, her physical health was checked by the anaesthetist, and she remained in the ECT department for about one hour after her treatment.

In April 1990, after more than a year of fortnightly continuation ECT, her cognitive function was assessed by a clinical psychologist experienced in testing psychogeriatric patients and post-ECT patients (DJW). The results were compared with a previous assessment carried out in June 1986 when the patient was well. She remembered little of the events surrounding her last admission to hospital in 1987. Her recall of events immediately before and after ECT on treatment days was patchy. Subjectively, her concentration was good. On testing, her immediate recall, delayed recall after ten minutes, knowledge of current affairs, and orientation were as when tested in 1986. Her verbal fluency had been about 10% below that predicted by her premorbid verbal intelligence in 1986, and in 1990 her verbal fluency was about 15% less than expected. At the time of testing she was not clinically depressed and had a Hamilton Rating Scale for Depression score of five.

In August 1990, 18 months after starting continuation ECT, her mood pattern remained the same. She was well

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for about 12 days after each ECT then became irritable or withdrawn for one or two days before the next treatment. She continued to receive nortriptyline 50 mg *nocte* only. She coped well in the nursing home, enjoying regular trips out and had organised a knitting club to provide clothes for a Romanian orphanage.

Discussion

Case studies such as this show that some patients who suffer potentially chronic or recurring depressive illness benefit from continuation ECT. In the present case, the symptomatic and social improvement meant that the patient returned to a life outside a psychiatric hospital. The extent to which this improvement was the result of the specific effects of ECT, and whether this improvement would have been as good (or better) had she accepted an alternative treatment, such as lithium carbonate, cannot be established from a case report. All that is known at present is that patients who persevere with continuation ECT suffer relapse less frequently than those patients who give up the treatment (e.g. Clarke *et al*, 1989; Grunhaus *et al*, 1990). The future management of this patient remains problematic as the re-emergence of symptoms between treatments suggests that the index episode of illness is not over.

This patient was typical of most contemporary patients selected for continuation ECT. She was elderly, had suffered a severe psychotic depressive illness that responded well to ECT, but relapse had not been prevented by continuation treatment using antidepressant drugs (Grunhaus *et al*, 1990). Usually the failure of continuation drug therapy is because of non-response or drug intolerance (Clarke *et al*, 1989), although in the present case non-compliance was also a major problem.

Treatments may need to be weekly immediately after symptom resolution (Clarke *et al*, 1989). Abrams (1988) recommended that treatments should be monthly, but also suggested that the frequency should be great enough to prevent relapse. The most important guide may be the pattern of relapse associated with the index or previous episodes of illness. In the present case, the pattern was such that it was likely the patient would have relapsed had treatments not been given fortnightly.

Abrams (1988) recommended non-dominant unilateral electrode placement because of its minimal effects on cognition. Unilateral ECT is popular, if not universal, in the United States of America, but the ECT Sub-Committee of the Royal College of Psychiatrists (1989) recommended the routine use of bilateral ECT. Once again the past history of treatment response may be the best guide, and there are patients (as in the present case) who do not respond to unilateral ECT. Whichever laterality of treatment, it is important to ensure that adequate cerebral seizure activity ensues at each treatment as recommended by the College guidelines. There is a report that unilateral electrode placement with a stimulus intensity just in excess of the seizure threshold is not as efficacious as moderately suprathreshold stimulation (Sackeim *et al*, 1987).

The appropriate duration of continuation ECT is debated and there is no appropriate research evidence to guide clinical practice. Some researchers have advocated a maximum of six months (e.g. Abrams, 1988), but others have recommended a minimum of six months (Clarke *et al*, 1989). Indefinite continuation ECT has been suggested for illness associated with serious suicidal intent, but not preventable by continuation drug treatment (Kramer, 1990). In part, this is the result of a failure to distinguish between continuation treatment that is to minimise the re-emergence of symptoms of the index illness and prophylactic treatment that is designed to minimise the likelihood of further episodes (or recurrence) of illness. The study by Kramer (1987) suggested that ECT is used in contemporary practice both as a continuation and prophylactic (or maintenance) treatment. Unfortunately, there are no research findings to answer the question of how long a symptom-free period must pass before it is appropriate to discontinue continuation treatment.

All treatments in medicine require an analysis of the likely benefits and possible risks. The safety of continuation ECT can be maximised by monitoring the patient's physical health to ensure that ECT is not given in the presence of a physical contraindication, such as a respiratory infection. Abrams (1988) advised against the use of concomitant psychotropic drug therapy, although the College guidelines were not as directive. Traditional tricyclic antidepressant drugs may increase the risk of cardiac complications particularly in patients with pre-existing heart disease, and lithium carbonate may increase the risk of postictal confusion (Abrams, 1988).

Out-patient ECT should be given as recommended by the Royal College of Psychiatrists (1989). Continual review of progress is mandatory. A potential pitfall is that patients are lost to regular out-patient review and are seen only by the staff in the ECT suite. In the present case, the patient's physical health was reviewed at each visit by the anaesthetist and psychiatric review was carried out by a monthly visit to the nursing home. The College guidelines advised that no more than one ECT be prescribed at a time. This cautious approach may be appropriate in the initial stages of treatment, but perhaps review after

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every second treatment is sufficient when the response of symptoms and pattern of cognitive side-effects become clear over a course of continuation ECT. In the present case, the patient lived in a nursing home where supervision was on hand. The frequency of review may have to be greater if the patient has only modest social support. The cognitive side-effects associated with ECT given by contemporary, constant-current ECT machines are less marked than those associated with traditional, constant-voltage ECT machines. Continuation ECT can be given to elderly patients without detectable cognitive impairment on Mini-Mental State scores (Thienhaus *et al*, 1990), although this instrument may be insensitive to cognitive impairment in depressed patients treated by contemporary ECT. No gross or histological signs of brain damage were found in an elderly woman who had undergone 1250 ECTs over 26 years (Selected Staff, 1985). Nevertheless, cognitive function must be assessed regularly. The aims of treatment are to prevent relapse and avoid cumulative cognitive impairment (Abrams, 1988). Both aims require further study.

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Adrenocortical Suppression Presenting with Agitated Depression, Morbid Jealousy, and a Dementia-Like State

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A 66-year-old woman showed profound neuropsychiatric disturbance after withdrawal from prolonged corticosteroid treatment. Reintroduction of an alternative corticosteroid, at low dose, produced a return to premorbid mental state.
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A disturbed mental state occurring in patients receiving corticosteroids or adrenocorticotrophic hormone (ACTH) has long been recognised. In the Boston Collaborative Drug Surveillance Programme (1972), of 780 consecutive hospital in-patients receiving prednisone, 21 (3%) developed acute psychiatric reactions, of which 13 were psychoses and eight inappropriate euphoria. More recent reports have described cases of mania (Minden *et al*, 1988), anxiety and paranoid states (Glynne-Jones *et al*, 1986), depression (Rutgers *et al*, 1988),

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