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ECT: II: Patients who Complain

By C. P. L. FREEMAN, D. WEEKS and R. E. KENDELL

SUMMARY Twenty-six subjects who complained of permanent unwanted effects following ECT were compared with two groups of control subjects on a battery of 19 cognitive tests. Many statistically significant differences were found in cognitive functioning, mostly attributable to the level of depression or medication in the complainers. However, after analysis of variance/co-variance some differences still remained, indicating impaired cognitive functioning in the ECT complaining group.

The aim of the study was to identify a group of people who had specific complaints about electroconvulsive therapy (ECT), to catalogue their complaints and to assess their cognitive function. Results on a battery of cognitive tests were compared with results from a group of matched normal volunteers.

Methods

With the cooperation of the local evening newspaper (circulation 140,000 approx.), an article was written entitled "Is there any harm in shock treatment?". At the end of the article readers who thought that ECT had had an adverse effect on them were asked to contact one of the authors:

> So if YOU have had ECT, no matter how recently or how long ago, and reckon it has had an adverse effect on you, the group would be grateful if you would help by allowing them to test your memory and ability to think quickly, and see how you compare with other people. It would only take about an hour or so one afternoon . . . and there are no shocks in store. That's a promise!

We also asked consultants in the hospital to let us know of any patient who had complained about ECT.

Each complainer was given an unstructured interview by either C.P.F. or R.E.K. A note was made of their complaints, time and number of treatments, and whether they would willingly have ECT again. An attempt was made to assess their mental state at interview to see if they were clinically depressed or otherwise ill and a note was made of their drug treatment, if any. This rough assessment was supplemented by completion of the Wakefield depression self-rating scale (Snaith *et al*, 1971) and the Middlesex Hospital questionnaire (Crown and Crisp, 1966). (All references are at the end of Paper III).

Subjects were tested for cognitive function by D.W. who did not know the nature of their complaints. A battery of 19 tests was used, as described with literature references at the end of Paper III. They covered visual design, verbal and spatial positional learning, verbal and visual memory, and there were two tests of remote memory, tests of delayed recall and recognition, a test of the ability to link faces with names, and tests of perceptual aptitude and concentration.

The subjects also filled in the Broadbent cognitive failures questionnaire which gives a self-rating of the subject's memory and concentration difficulties.

Controls—A group of volunteers who had not had ECT, and most of whom had not been psychiatric patients, were tested in exactly the same way. These were group-matched with the ECT complainers for age, sex, social class, educational level and intelligence. These volunteers were also obtained via an article in the same evening newspaper which asked for people

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who would be prepared to help out with research projects at the Royal Edinburgh Hospital.

The samples—Twenty-eight people replied to the newspaper article, 10 men and 18 women. One woman had Alzheimer's disease and was attending the hospital as a day patient. She had insisted on coming when her husband brought the article to her attention. She was interviewed but was not testable.

Of the remaining 27, 14 had specific complaints about ECT (newspaper complainers), and 13 had misunderstood the article (newspaper non-complainers) and attended because they thought we wanted to have any views on ECT. They had either good or neutral things to say about the treatment. On closer questioning most had one or two very minor complaints about the treatment.

Twelve patients were identified via psychiatrists in the area, (hospital complainers), as they had told their doctors that ECT had produced enduring unwanted effects.

Results

The majority of complainers were women: 22 to 5 men (see Table I). There were only minor differences between the groups, except that the hospital complainers had last had ECT much more recently than either of the newspaper groups.

Nature of complaints

Case summaries are given in the Appendix. The commonest complaint by far was about some type of memory impairment. There were two main types of memory complaint: everyday forgetfulness such as forgetting faces or names, forgetting 'phone numbers or messages, forgetting things when going shopping; and secondly, holes or gaps in past memories.

Most subjects accepted that there might be poor memory for the time of their illness and course of ECT. Their complaints were of lost periods, usually some months before ECT but occasionally afterwards. One subject complained he could not remember an annual summer holiday, another a wedding which occurred six months after ECT. The amount of distress this memory impairment caused varied considerably, but most found it irritating rather than incapacitating.

Other complaints were of epilepsy (patient 7), severe episodic pain (patients 7 and 21), personality change (patients 9 and 16), difficulty in knitting and fine hand function (patient 12), poor concentration (patients 22, 24 and 26). Many subjects had more than one complaint.

In all these cases the subjects definitely related the onset of the complaint to a course of ECT.

Only one complainant was against ECT in principle (No. 4). She felt it was a senseless and

TABLE I

Means of personal variables for the groups

	Newspaper non-complainers N = 13	Newspaper complainers N = 14	Hospital complainers N = 12	Normal volunteer controls N = 53
Male: Female	7:6	3:12*	2:10	1:2.3
Age (years)	56.8	50.6	52.7	52.9
Social class	3.1	2.9	2.8	2.7
Education in years of schooling	10.3	11.5	11.3	11.2
Total no of ECT	10.1	13.9	9.9	Not applicable
Time in years since ECT	12.8	9.3	2.6	Not applicable
IQ	104	104	102	108

* One woman untestable (Alzheimer).

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illogical thing to pass an electric current across peoples' brains when they were depressed.

Of the total of 26 complainers 4 said they would have ECT again, 13 said they would never have it again under any circumstances and 9 said they were doubtful and it would depend on the circumstances, such as how depressed they were or whether antidepressants had failed. All the non-complainers said they would have ECT again.

Thus we did not attract any cranks or politically motivated complainers by our enquiries or, if we did, we didn't detect them. All but one of the subjects put their complaints in a reasonable balanced way, they seemed genuinely concerned by their difficulties and often relieved when told the results of their test scores. We did not get the impression that people were exaggerating their complaints or 'faking bad' on the cognitive test results.

Comparisons on non-cognitive tests

The subjects as a whole rated themselves as more depressed than the matched volunteer controls on the Wakefield scale. They also scored more highly than the volunteers on the Middlesex Hospital questionnaire (MHQ) on both total score and all subscales except hysterical personality. They rated themselves as having more cognitive failures on the Broadbent questionnaire. (See Table II). ECT complainers (n = 26) scored as more distressed on the same tests than ECT non-complainers (n = 13). (See Table III).

As drug taking varied greatly from subject to subject both in amount and type of drug, each subject was crudely rated on a score of 0–4 on the amount of psychotropic drugs taken. (Example: nitrazepam 5 mg taken the night before would score 1; diazepam 5 mg t.d.s. would score 2; amitriptyline 150 mg daily would

TABLE II

Comparison of ECT subjects with normal volunteers by mean scores

	All ECT subjects N = 39	Normals N = 53	Significance
Wakefield self-rating scale	17.2	7.9	P <0.001
Middlesex Hospital questionnaire			
Total symptom score	42.3	24.2	P <0.001
Sub scales			
Free floating anxiety	10.1	5.5	P <0.001
Phobic fear	6.3	3.3	P <0.001
Obsessive symptoms and personality	9.7	6.8	P <0.001
Somatization complaints	7.7	5.0	P <0.001
Depression	8.5	4.6	P <0.001
Hysterical extravert personality	4.4	3.9	NS
Broadbent cognitive failures questionnaire	73.9	63.9	P <0.01

TABLE III

Relative illness of ECT complainers vs non-complainers

	ECT complainers (N = 26)	ECT non-complainers (N = 13)	Significance
Wakefield	19.1	13.2	P <0.005
Middlesex Hospital questionnaire	43.3	40.4	P <0.001
Medication	2.3	0.8	P <0.005

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score 3; diazepam 30 mg daily, barbiturates in doses of 200 mg daily, major tranquillizers if more than 100 mg daily of chlorpromazine or its equivalent would all score 4. Using this measure the complainers were taking more drugs than the non-complainers.

Thus on all measures of symptoms and medication the complainers scored more than the non-complainers and the subjects as a whole scored more than the normal volunteer controls. The non-complainers' scores were closer to the normal volunteers than to the complainers.

Comparisons on cognitive tests

When all ECT subjects were compared with the normal controls they were significantly impaired on eight tests, (See Table IV) and not impaired on eleven. They were slower than controls and their retention was poor; they couldn't remember a spoken paragraph of text as well; they couldn't put names to faces as well. They scored poorly on memories of their own past and on remembering personalities since the 1950s. In general, the test results appeared to match the subjects' complaints.

Despite rating themselves as more depressed, more anxious etc., and being on drugs, they did as well as the matched volunteers on the majority of tests. Their new learning, (visual, spatial and verbal), was not impaired and they remembered personalities from the 1930's–1950's as well as controls.

Removing the 13 non-complainers from the ECT group and then comparing the complainers with normal controls alters the picture very little. The difference on personal remote memory becomes non-significant because the N is smaller and the means remain the same. Complainers were significantly better than non-complainers on one test and worse on two (Table V).

Summary of group comparisons

The picture emerges of a group of patients who have had ECT, who rate themselves as more depressed, having more symptoms in general and currently receiving more medication, and who perform significantly worse on a number of cognitive tests than a group of volunteer controls. They also tend to be more impaired than a small group of non-complaining subjects who have also had ECT (See also Table VI).

A crucial question therefore arises: How

TABLE IV

All ECT subjects vs normal volunteers on cognitive tests

Test	ECT subjects N = 39	Volunteers N = 53	Significance
Personal remote memory	38.8	40.5	P < .05
Logical memory	9.5	12.5	P < .001
Famous personalities			
from past 1960's	11.6	14.4	P < .001
1970's	13.9	15.8	P < .001
Verbal memory sensitivity	2.7	4.0	P < .001
Face-name connection	5.7	7.1	P < .02
Decision time (m/secs)	445.6	353.7	P < .001
Movement time (m/secs)	365.9	258.3	P < .001

(t test independent)

There were non-significant differences on:

Delayed recall, Delayed recognition, Famous personalities from past 1930's, 40's and 50's, Verbal learning, Spatial positional learning, Visual design learning, Anomalous sentence repetition, Perceptual aptitude, Incidental visual memory.

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TABLE V

Comparison of ECT complainers vs ECT non-complainers

Test	ECT complainers (N = 26)	ECT non-complainers (N = 13)	Significance
Verbal learning	26.9	21.4	P <0.005
Famous personalities of 1960's	11.4	12.3	P <0.05
Logical memory	9.1	10.2	P <0.05

TABLE VI

Comparison of ECT non-complainers with normal volunteer controls

Test	ECT non-complainers	Volunteer controls	Significance
Movement time (m/sec)	304	267	P <0.005
Verbal learning	21.4	23.9	P <0.005*

* ECT non-complainers less impaired

much of the poor performance of the complainers is due to their level of depression, and medication?

Analysis of variance

To try to answer this question the test results on all tests by all subjects and controls were put into an analysis of variance/covariance matrix with level of medication, level of depression, total symptom score on MHQ, age and social class as covariants. The object was to determine how much of the variance in test scores could be accounted for by these five variables, and whether having allowed for this the test results which had discriminated between subjects and controls still did so. We examine the previously significant differences test by test.

(a) Decision time and Movement time:
These are measures of speed. Level of medication had a very large effect on results and level of depression a significant effect. There were smaller contributions from age and MHQ scores. When these factors were allowed for there was no significant difference between complainers and controls on either test.

(b) Famous personalities of 60's and 70's:
All five covariates had an effect and when they were allowed for the significant difference between controls and complainers disappeared.

(c) Logical memory test:
The level of significance increases, so some of the covariates must have been operating in the direction of reducing any difference. In other words, the difference between complainers and controls becomes greater when the five covariates are allowed for.

(d) Face-name test:
Social class was a significant covariate. All the other covariates had little effect and the difference between the complainers and controls remained significant, P < .05.

(e) Verbal learning:
Medication had little effect on this test. The Wakefield score and total symptom score of the MHQ both had large effects and age had some effect. When all five covariates were allowed for the difference between complainers and controls remained significant, P < .05.

(f) Personal remote memory:
All covariates had some effect on this test and when they were all allowed for the

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difference between complainers and controls just missed significance at $P < .05$.

Individual test results

So far we have only considered group comparisons on cognitive testing. Although there were a number of statistically significant differences between the means of the groups, when translated into clinical terms these differences are all small.

When the scores of individual subjects are examined there are some large deficits on some tests. A few patients scored well into the organic range on some measures. Sometimes there was a probable explanation for these deficits. For instance in patient 1, and possibly in patient 5, alcohol could be implicated. Patient 20 was taking large amounts of psychotropic medication. Patient 10 was on a considerable amount of medication and was very anxious. Patients 24, 26 and 27 were clinically depressed. However in a number of patients, particularly numbers 2, 14, 16 and 25, there seemed to be no ready explanation for their poor test results. They were virtually symptom-free, not taking drugs and as far as we could tell had no history of brain damage or excessive alcohol consumption.

The most convincing complainers who had no obvious explanation for their poor memory appeared to have nothing in common. They had not had excessive amounts of ECT, nor had their ECT been more recent than the other complainers, nor, as far as we knew were there any complications during their treatment. There were no comments in the case-notes about things going wrong such as prolonged hypoxia, missed fits, stuns, or excessive applications of electricity.

Discussion

The findings of this study must be interpreted with caution. We have not shown that ECT causes permanent memory impairment, though our results are compatible with this possibility. The study was designed as a descriptive one. What we have done is to describe in some detail a self-selected group of patients who complained about enduring unwanted effects of ECT. We have found that members of this group do have some areas of impaired cognitive function, but on the majority of tests they performed as well as control subjects. On the tests where they were impaired, much of the impairment could be accounted for by other factors such as their level of depression and their level of medication. However, even when these factors and three other variables were taken into account not all the difference could be explained.

We are left with the fact that on three of a large battery of tests the ECT complainers performed significantly worse than the controls. Although these results are statistically significant their practical significance is less certain. The differences on test scores were not great when the groups as a whole were compared, and it is not possible to say whether the differences are certainly due to the ECT, or to something else which had happened in the period since the end of treatment. The length of time since the last course of ECT varied from nine months to thirty years and in the group that answered the newspaper advertisement the mean time since their last ECT was ten years.

There are two possible explanations for our findings. The first is that ECT does indeed cause some lasting impairment of memory in a small proportion of the people who receive it. The second is that our ECT complainers were simply people whose memories came in the lower half of the normal range, or had some mild impairment of memory for other reasons, and mistakenly attributed these failings to the treatment they had received years before. One man, for example, had a history of heavy drinking and had fallen down stairs and concussed himself on four occasions.

In our study on patients' attitudes to ECT (see Paper I, p. 12), we found that 12 per cent of patients agreed with the statement that "My memory now is better than ever". Had our newspaper article been worded differently it is conceivable that we could have attracted a group of people who had had ECT but whose memory was better than average.

What is clear is that the present subjects themselves clearly linked their memory impairment with having had ECT. Some were quite emphatic that their memory had been

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average or above average beforehand. In a number of cases the memory disability had become apparent shortly after the course of ECT and had remained constant over many years. It may be that ECT does cause some degree of permanent memory impairment in a small proportion of the patients who receive it, but we consider that our own and other comparisons of carefully matched groups of patients receiving ECT and drug treatment indicate fairly convincingly that ECT does not normally produce such enduring effects on memory, though they do not prove that it never does so. It would, however, require a very large scale, and probably multicentre, prospective study to detect impairments that only affected, say, one patient in a hundred.

All references and the address of the authors will be found after Paper III.

APPENDIX:

Case Histories of Complainers

Numbers 1–14 were obtained through the newspapers, the rest from consultant psychiatrists.

1. *Male. Age 48:* I.Q. 98. ECT 2 courses 1960–1972 for severe depression. *Complaints*—Slight but persistent difficulty in remembering numbers and names. *Cognitive function*—Impaired on nearly all tests, particularly remote memories, face-name test.

Impression—Not depressed or otherwise ill when seen. Past history of alcohol consumption amounting to 50 pints of beer per week. Four episodes of concussion requiring overnight admission to hospital. Diastolic BP 120 mm Hg. Seems to be considerably underestimating his deficits.

2. *Male. Age 53:* I.Q. 116. ECT 1 course 1973, 6 treatments for depression. *Complaints*—Forgetful of names, gets easily sidetracked and forgets what he was going to do. One particular hole in his memory. Can't remember going to a wedding a few months ago, 6 years after ECT. *Cognitive function*—Poor on personal remote memory and on face-name, delayed recall impaired.

Impression—Slightly anxious but not now depressed. Correct assessment of his deficits, for which there is no obvious reason.

3. *Male. Age 48:* I.Q. 125. ECT 1 course of 27 ECT in 1972. *Complaints*—Two particular holes in his memory. One a few months before, the other a few months after ECT. Now has generally poor memory. Sure that memory was good before but doesn't know whether to attribute loss to ECT or illness. Wouldn't have ECT again. *Cognitive function*—Good. Verbal learning somewhat impaired.

Impression—Severe obsessional neurosis of 20 years standing. Takes 30 mg diazepam daily plus L. tryptophan. Scored highly on Wakefield depression inventory. Holes in memory probably would not be picked up on our tests, otherwise did better on tests than his complaints would suggest.

4. *Female. Age 19:* I.Q. 90. ECT 1 course of 5–8 treatments when aged 16. Would never agree to have ECT again. *Complaints*—Very against ECT. No complaints about her own experience of treatments, but feels that it is a senseless and illogical thing to give people shocks across their brain. No memory complaints. Not anti-psychiatry in general. *Cognitive function*—Within normal range except for mild impairment of verbal memory.

Impression—From her history she clearly had considerable adolescent problems. In the past she had cut her wrists and taken overdoses. ECT may well have been an inappropriate treatment. We were puzzled by her strength of feeling about ECT.

5. *Female. Age 57:* I.Q. 96. ECT 1 course 1962. Would have ECT again if doctor recommended it. *Complaints*—Indaequate separation from other patients at time of treatment. Poor memory; has to write things down more than she used to. Not distressed by this. *Cognitive function*—Moderate impairment on a number of tests. Face-name, verbal memory, mental set shifting. Also slow on reaction time, cube analysis and card dealing.

Impression—Main complaint was that her GP had made her alcoholic by suggesting she take a sherry at night to help her sleep. Claims she has now been abstinent for four years, and is a stalwart A.A. member. Her memory complaints and cognitive function were congruent.

6. *Female. Age 58:* I.Q. 123. ECT 2 courses in 1967 and 1974. Would have ECT again if very depressed. *Complaints*—Gaps in memory going back 20 years, prior to last ECT. Not a serious problem. Not sure if it was her age. Otherwise no memory complaints. *Cognitive function*—Entirely within normal range except for personal remote memory which was 1. SD below mean.

Impression—Intelligent veterinary surgeon. Entirely well at present. Complaints and test results congruent.

7. *Female. Age 48:* I.Q. 100. ECT 18 treatments in 1962 following puerperal depressive illness. Doesn't know if would agree to ECT again. *Complaints*—2 grand mal fits 3 months after ECT followed by a large number of what were probably temporal lobe attacks. All fits stopped when her tricyclic medication was stopped. Intermittent severe pain radiating from

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her left temporo-mandibular joint to whole of left side. Told by neurologist 14 years ago that ECT may have damaged trigeminal nerve. *Cognitive function*—Delayed recall and decision time mildly impaired. Otherwise entirely normal.

Impression—Epilepsy seems definitely temporally related to ECT and antidepressant treatment. Current neurological opinion is that her unusual facial radiating pain could be temporomandibular arthrosis. Patient says that she wouldn't have associated pain with ECT unless neurologist had suggested it.

8. *Female. Age 60:* I.Q. 114. ECT 12 treatments in 1970. Would readily have ECT again. *Complaints*—Memory impairment, Says she was known in her bridge club as the 'computer' because of her good memory. Now has to write things down, and misplaces her keys and jewellery. *Cognitive function*—In middle of normal range for age and intelligence.

Impression—She takes at least 60 mg chlordiazepoxide, imipramine 75 mg, thioridazine 50 mg and nitrazepam 10 mg daily out of habit. She was entirely well, leading a full and active social life but would seem to be dependent on her many drugs.

9. *Female. Age 63:* I.Q. 106. ECT 63 treatments in Canada in 1950. Wouldn't have ECT again. *Complaints*—Regards all current and past troubles as due to ECT including need for flupenthixol injections. Convinced that ECT has changed her personality and made her miserable. *Cognitive function*—Gross impairment of ability to learn visual designs. Decision and movement time both slow.

Impression—Fairly typical chronic schizophrenic who accepts that she had a mental illness before ECT but blames the chronicity of her illness and personality change on ECT.

10. *Female. Age 35:* I.Q. 88. ECT 6 bilateral treatments in 1969. Would have ECT again if drugs didn't work. *Complaints*—Difficult to remember phone messages. Gets mixed up when people tell her things. Dates this from ECT. Still has a good memory for faces. *Cognitive function*—Sentence repetition, and verbal memory impaired. Slow decision time, Porteus maze tests poor in both speed and errors.

Impression—Pleasant, very anxious women with mild phobic illness. Takes diazepam 10 mg daily. Cognitive test results compatible with complaints.

11. *Female. Age 33:* I.Q. 89. ECT 6 bilateral treatments in 1977. Wouldn't have it again. *Complaints*—Multiple complaints about almost everyone who had tried to help her; psychiatrists, social workers, housing department etc. She felt ECT had generally made her worse but couldn't elaborate. Her memory was worse. She couldn't remember what her children told her. *Cognitive function*—Definite impairment on face-name test. Spatial learning and sentence repetition mildly impaired. Decision and movement time slow.

Impression—A rather dramatic lady dressed all in white. Was tearful throughout the interview. Said she was completely crippled by her anxiety symptoms. In comparison with all her other complaints those about ECT were trivial.

12. *Female. Age 57:* I.Q. 110. ECT 1 course of 6 ECT in 1969. Wouldn't have ECT again. *Complaints*—Difficulty knitting. She keeps making mistakes and has to knit slowly. Cannot retain things that her daughter and friends tell her. She feels her memory is progressively getting worse and that this can't be her age. *Cognitive function*—Moderate impairment of logical memory and decision time.

Impression—Manic depressive well maintained on lithium and tranylcypromine. Completely well when interviewed. Marked tremor, presumably from lithium, which may account for her knitting difficulty. Cognitive function objectively less impaired then her complaints would suggest.

13. *Female. Age 67:* I.Q. 118. ECT 7 bilateral ECT four years before testing. *Complaints*—Memory impaired since ECT. *Cognitive function*—Gross impairment of visual design learning. Decision and movement time slowed.

Impression—Moderately depressed and anxious when seen. Diagnosed as schizophrenic in past. She appears to have some residual symptoms.

14. *Female. Age 52:* I.Q. 102. ECT 1 course of 6 ECT 18 years before testing. *Complaints*—Terrible memory since. At present wonders if it might be due to her age but has always blamed ECT. *Cognitive function*—Poor personal remote memory. Poor on face-name test. Modest impairment on spatial/positional learning and verbal learning.

Impression—Not ill or depressed when tested. Does seem to have some definite impairment which is not accountable for by drugs or depression.

15. *Female. Age 40:* I.Q. 96. ECT 1 course of 6 treatments 14 months before testing. *Complaints*—Poor memory since ECT. Couldn't give examples. *Cognitive function*—Only very mild impairment on decision time and delayed recall.

Impression—Anxious, rather obsessional lady. Still attends day hospital. Not obviously ill. Rated herself as moderately depressed.

16. *Female. Age 63:* I.Q. 102. 30 ECT 8 years before testing, for depressive illness. *Complaints*—Permanently damaged by ECT. Not very specific about how she was damaged, gave impression that her personality was changed. Denies any memory impairment. *Cognitive function*—Grossly impaired verbal learning. Face-name, sentence repetition and perceptual aptitude impaired.

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Impression—Not psychiatrically ill now. The sort of woman who might attract the label hysterical personality disorder from some psychiatrists. Test results not explained by drugs or symptoms.

17. *Female. Age 65:* I.Q. 95. ECT 2 courses 9 months and 2 years before testing. Approximately 15 ECT. *Complaints*—Had thought memory impairment was permanent but now beginning to doubt this as her memory has recently improved. *Cognitive function*—Gross impairment of verbal and visual design learning. Verbal memory impaired. Face-name test and mental set shifting, sentence repetition all impaired. Decision time and movement time both very slow.

Impression—Only mildly depressed when tested. Surprising degree of impairment. In normal/mildly depressed range on Wakefield. Memory functioning so poor at one stage thought to be dementing.

18. *Female. Age 45:* I.Q. 115. ECT 1 course nine months before testing. Would have it again. *Complaints*—Memory still affected. Forgets where she puts things, can't remember names. *Cognitive function*—Very slow on card dealing; sentence repetition and delayed recall impaired.

Impression—On lithium, amitriptyline and trifluoperazine with marked side effects of drowsiness, slurred speech. Considering this she did remarkably well.

19. *Female. Age 62:* I.Q. 118. ECT 4 bilateral ECT 2 years before testing and 1 course many years ago. *Complaints*—Memory permanently affected. *Cognitive function*—Definite impairment on face-name, spatial and visual learning decision and movement time slow.

Impression—Still depressed, rates herself highly on Wakefield and analogue scales.

20. *Male. Age 55:* I.Q. 101. ECT 2 courses 5 years before testing. *Complaints*—Multiple. Memory poor and gets confused, to such an extent that he loses jobs. Muscle aches and pains across chest. Believes all definitely due to ECT. *Cognitive function*—Careless impulsive errors on some tests. Face-name test very impaired, mental set shifting and visual incidental memory impaired.

Impression—A withdrawn, isolated and lonely man prone to bouts of depression. Takes amitriptyline 150 mg daily. Not depressed when tested.

21. *Female. Age 39:* I.Q. 94. ECT 6 unilateral ECT 8 months prior to testing. Wouldn't have it again. *complaints*—Slight but definite memory impairment. Can't concentrate as well. *Cognitive function*—Verbal learning and verbal memory impaired. Mental set shifting very impaired.

Impression—Mildly depressed when tests. Chronically depressed and rather disillusioned with all psychiatric treatment.

22. *Female. Age 44:* I.Q. 96. ECT 6 bilateral treatments 20 months prior to testing. *Complaints*—Mild but definite memory impairment. Agrees it fluctuates with her mood. *Cognitive tests*—Verbal learning mildly impaired. Otherwise normal.

Impression—Not depressed when tested.

23. *Male. Age 47:* I.Q. 89. ECT 4 bilateral ECT 2½ years previously. Wouldn't have it again. *Complaints*—Poor memory, can't concentrate. *Cognitive function*—Impaired logical memory, spatial learning and mental set shifting.

Impression—Chronically depressed and anxious man. Still quite severely depressed when tested.

24. *Female. Age 68:* I.Q. 112. ECT 3 courses 1958, 1971 and 1972 (13 treatments). *Complaints*—Memory poor for everyday events: messages, faces. *Cognitive function*—Impaired on sentence repetition, face-name, verbal learning and memory, mental set shifting and positional learning.

Impression—Not depressed or otherwise ill when tested. Poor results not obviously explained.

25. *Female. Age 55:* I.Q. 116. ECT 16 bilateral ECT 3 years previously. *Complaints*—All aspects of memory, learning and retention. Can't do her job as well because of it. *Cognitive function*—Very impaired on sentence repetition and verbal memory. Verbal learning impaired. Decision and movement time slow.

Impression—Chronically depressed. Scored 27 on Wakefield.

26. *Female. Age 49:* I.Q. 95. ECT 1 course of 6 bilateral ECT 19 months before testing. *Complaints*—All aspects of memory. Holes in memory from past. Can't retain things, has to make lists. *Cognitive function*—General poor performance. Face-name, delayed recall, personal remote memory. Mental set shifting and logical memory all impaired.

Impression—Unhappy lady with chronic marital problems. Scored highly (28) on Wakefield.

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