

## Maintenance ECT in the treatment of PD

## Therapy improves psychotic symptoms, physical function

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**P**arkinson's disease, a neurodegenerative disorder characterized by a loss of dopaminergic cells in the substantia nigra as well as other pigmented nuclei,<sup>1</sup> affects 1% of the population over age 60.<sup>2</sup> Although the introduction of levodopa in the early 1960's and the recent developments of newer pharmacologic agents have helped tremendously to ameliorate motor symptoms, Parkinson's disease remains a progressively deteriorating illness often complicated by psychiatric comorbidity including depression (40%),<sup>3</sup> anxiety (28 to 40%),<sup>4</sup> and dementia (30%).<sup>3</sup>

The benefits of electroconvulsive therapy (ECT) for Parkinson's disease were noted as early as 1947,<sup>2</sup> and by 1999, at least 47 reports on this subject had been published,<sup>5</sup> including reports on patients without psychiatric comorbidity.<sup>6,7</sup> Often overlooked by movement disorder specialists in favor of other, more drastic treatments such as pallidotomy, fetal tissue implant, and deep thalamic brain stimulators, ECT can provide a remarkable and well-tolerated palliative treatment for later stages of Parkinson's disease when the benefits of

medications have diminished. There are at least three reports of patients (7 patients total) receiving maintenance ECT for Parkinson's disease.<sup>5,6,8</sup> In this article, the author reports on a patient who received acute, and then maintenance ECT for Parkinson's disease during a 4-year period.

**Methods.** The clinical impression of improvement came from physician observation as well as interviews with the patient, his family, and other caregivers.

#### Case presentation

Mr. B, a 73-year-old man with a 15-year history of Parkinson's disease, was seen during a hospital admission to rule out MI for chest pain. His Parkinson's disease was late-stage and was poorly controlled by medications. His gait was severely impaired, and he spent most of his time in a wheelchair. He had developed depression as defined by DSM-IV diagnostic criteria that was characterized by depressed mood, amotivation, anergia, anhedonia, social withdrawal, diminished self-worth, and feelings of hopelessness. The patient and his family were considering additional Parkinson's disease treatment options, including pallidotomy and fetal tissue implantation. His medical condition precluded these surgical interventions, however, because he also had coronary artery disease and renal insufficiency caused by a newly diagnosed multiple myeloma. Mr. B was also exhibiting signs of an early-stage dementia with evidence of disorienta-

tion that typically occurred at night.

He had received tricyclic antidepressants as well as several selective serotonin reuptake inhibitors (SSRIs) with no benefit. His medications at the initial assessment were amitriptyline, 10 mg qhs; carbidopa/levodopa CR, 50/200 mg one-half tab q2am; carbidopa/levodopa, 10/100 mg 7.5 tabs/d; pergolide, 0.25mg 7 tabs/d; selegiline, 5mg bid; finasteride, 5mg qam; and zolpidem, 10 mg qhs prn. ECT was recommended at that time, however, medical concerns pre-empted initiation of treatment.

**CONCLUSIONS**  
This benefit of maintenance ECT is consistent with the findings of others who used ECT in late-stage PD

During the next 2 months, Mr. B had repeat hospitalizations to rule out MI, and for glomerulonephritis due to gammopathy, congestive heart failure, and pneumonia. During this time, his confusion worsened and he was started on risperidone, 1mg qhs, for agitation at night. His mental state deteriorated as the result of worsening dementia and depression, and further discussions were held regarding the use of ECT.

Approximately 3 months follow-

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**Disclosure:** The author has no real or apparent conflicts of interest related to the content presented in this article.

**Table** Case reports of maintenance ECT for Parkinson's disease

Study	Gender	Age	Years of PD	Months of ECT Tx	Number of ECT Tx's	Type of ECT	Response
<b>Aarsland, et al, 1997<sup>6</sup></b>							
	M	63	6	33	57	Right unilateral	Good
	F	63	17	48	53	Right unilateral	Good
<b>Fall and Granerus, 1999<sup>5</sup></b>							
	M	62	22	18	79	Right unilateral	Good
	F	83	7	4	10	Right unilateral	Good
<b>Shulman, 2003, Mr. B (This case)</b>							
	M	73	15	48	72	Bitemporal	Good
<b>Wengel, et al, 1998<sup>8</sup></b>							
	F	74	10	3 to 4	11	Bitemporal	Equivocal
	F	63	6	12	18	Bitemporal	Good
	M	60	10	12	24	Bitemporal	Good

Source: Prepared for Geriatrics by Robert B. Shulman, MD.

ing the initial psychiatric assessment, Mr. B underwent a course of outpatient bitemporal ECT. He had a series of four electroconvulsive treatments with a remarkable response. His affect brightened and his mood became euthymic. Moreover, his movement and gait improved dramatically. The risperidone was stopped because he was no longer agitated, and his cognitive capacity was much clearer. The amitriptyline also was stopped because Mr. B was no longer depressed. After being mostly confined to a wheelchair for the previous year, he walked out of the hospital after the fourth treatment. Later, he also walked up an aisle and gave a short speech at an out-of-town family event and, after his return home, he wrote a scholarly essay in his field of study.

This remarkable improvement persisted for approximately 12 weeks, at which time Mr. B started to become more rigid and less functional. Because the initial treatment had provided such a pronounced improvement in his motor symptoms of Parkinson's disease, a second course of ECT was initiated, even though Mr. B had no evidence of any psychiatric symptoms. Three treatments 1 week apart produced another excellent response to treatment and a similar return of func-

tion. During the next 15 months, Mr. B returned for four more short series of three to four treatments every 3 to 4 months. The following year, he was not responding as well and returned more frequently, every 2 months, for these short series of treatments. Consequently, Mr. B was changed to a maintenance ECT routine of every 2 to 4 weeks, depending on his status. For the next 2 years, he received maintenance bitemporal ECT approximately once every 3 weeks. Mr. B's family felt that the ECT kept him much more mobile and functional, and allowed him to remain in his home with family and caregivers.

Following initiation of ECT, Mr. B had three subsequent hospitalizations. The first was 1 year into treatment for pneumonia and congestive heart failure. The second was 3 years later for an upper GI bleed. At that time, the family decided to stop the ECT because Mr. B was showing signs of cognitive decline. Eight months later, Mr. B was admitted to the hospital with pneumonia and renal failure. During this hospital admission, his family said that he had exhibited a severe cognitive decline in recent weeks. After a lengthy discussion with the family, Mr. B was transferred to an inpatient hospice unit

where he died peacefully several days later, surrounded by family and friends. In our most recent communication with Mr. B's family, they maintain that ECT extended his life by 4 years, allowing him to remain in his home and giving his life a quality it would not have otherwise had.

## Discussion

This case illustrates the long-term use of ECT to ameliorate the disabling symptoms of late-stage Parkinson's disease. The benefit of maintenance ECT for Mr. B is consistent with the findings of others who used this treatment modality in late-stage Parkinson's disease (table). The case report includes aspects of daily living that hopefully provide a narrative of the real-life effects that illness and effective treatment can have on afflicted individuals and family.


Experts in the treatment of Parkinson's disease often ignore the benefits of ECT as a matter of course, although they may admit to its usefulness when asked.<sup>9,10</sup> The benefits of ECT for depression in Parkinson's disease have been well described with clear evidence of its beneficial effects on motor symptoms as well as on the disabling effects of the on/off phenomena.<sup>8</sup> There are

now at least eight cases (table) reporting the benefits of ECT for the long-term maintenance treatment of Parkinson's disease.

Although ECT is not a benign treatment, modern ECT is well tolerated, even in medically compromised individuals. Essentially, Mr. B experienced no side effects except for expected transient confusion as well as a headache after each treatment that typically responded to over-the-counter analgesics.

The risk of post-ECT delirium has been noted in Parkinson's disease patients and seems to be greater than in depressed patients without Parkinson's disease.<sup>11</sup> It has been postulated that this effect is due to excessive dopamine transmission in Parkinson's patients receiving their usual dose of dopamine agonists during ECT,<sup>12</sup> and thus one recommendation is to reduce the standing doses of dopamine agonists prior to initiating ECT. Others have found that cognitive ability may actually improve following a course of ECT, primarily as a result of improvement in psychiatric illness.<sup>2</sup> In my experience, post-ECT delirium is transient and easily managed. It tends to occur more frequently during series of electroconvulsive treatments as opposed to maintenance ECT where the treatments are spaced to every 3 to 4 weeks.

Given the devastation of Parkinson's disease, ECT should be considered as an adjunctive treatment for those individuals in whom the later stages of Parkinson's disease do not respond to medical intervention and in whom the on/off phenomena is incapacitating. The potential benefits of maintenance ECT in Parkinson's disease outweigh the risks of transient confusion, which can be minimized and managed by other means. Further study regarding maintenance ECT in Parkinson's dis-

ease is needed to identify who would best benefit from this treatment and what treatment schedule is most effective. 

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