

# Major Depression and the Use of Electroconvulsive Therapy (ECT) in Lung Transplant Recipients

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*The purpose of this study is to describe the potential risks and benefits of electroconvulsive therapy (ECT) for treatment of depression in lung transplant recipients. The authors performed a record review of depressed patients who underwent lung transplantation at Johns Hopkins Hospital and evaluated their treatment, including ECT. In 9 years, 131 lung transplants were performed, and four patients had been diagnosed with major depression. Of those, two were candidates for ECT, and one received it. This patient's depression did abate with ECT. ECT, an effective treatment for depression, remains a treatment method of choice for depression in the posttransplant population.*

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Chronic lung disease remains the fourth leading cause of death.<sup>1</sup> It is estimated that in approximately 20 years, it will become the third leading cause of death, surpassing stroke. As a result of the increasing number of those suffering from chronic lung disease, the number of patients requiring lung transplantation has also substantially increased.<sup>2</sup> Lung transplantation has been shown to dramatically improve the physical status and quality of life of severely ill patients.<sup>3</sup> Past research has focused on psychiatric manifestations after organ transplantation and has indicated that large numbers of patients suffer from various forms of psychiatric illness, including major depression, during the posttransplant period.<sup>4</sup>

Attempts made to assess the population of pretransplant patients found that 50% of candidates for lung transplantation had a diagnosable psychiatric disorder.<sup>5</sup> Singer et al.<sup>6</sup> assessed personality profiles of lung transplant candidates and noted that somatic, anxiety, and affective symptoms are often present in this patient population.

Given this fact, and in light of the large impact that chronic lung disease has on our population, it behooves the psychiatric field to assess this patient population for psychiatric care. For example, Thoren<sup>7</sup> has reported a high comorbidity between asthma and anxiety disorders, and others<sup>8,9</sup> have reported the link between chronic obstructive pulmonary disease and affective disorders. Yet other reports have attempted to describe the psychological impact of such illness on the lives of patients. For example, Coffman<sup>10</sup> assessed the psychodynamic aspects of pulmonary disease on patients.

Although affective disorders have been noted in patients with chronic lung disease, including in those requiring transplantation, it is unclear whether screening techniques are currently used to detect comorbid affective conditions in daily practice. In addition, the treatment of such cases is often felt to be problematic. When a patient with debilitating chronic lung disease presents with major depression, physicians remain uncertain about which course of treatment is most beneficial. Both pre- and post-transplant patients are prescribed numerous medications for their illnesses, making the addition of psychiatric medications more difficult, since these may increase the risk of serious drug interactions. ECT remains an alternative and effective treatment for major depression. While Rabheru<sup>11</sup>

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found that ECT remains a safe and effective treatment in medically ill populations, concern exists that this treatment is too dangerous and controversial for patients suffering either from the effects of incapacitating lung disease or the sequelae of lung transplantation.

The purpose of this article is to present a case history of depression diagnosed in a lung transplant patient at a large academic center and to review the adequacy and safety of treatment methods used, which included ECT.

## METHOD

We obtained information about all lung transplantation procedures performed at Johns Hopkins Hospital over a 9-year period (1993–2002). Using past records, we compiled a database with all relevant information on lung transplant patients: diagnosis, date of transplant, side of transplant (right/left/bilateral), current status (alive or deceased), and number of survival days. We cross-referenced this list with a hospital database listing diagnoses associated with hospitalized patients. We examined these databases to find patients that had both undergone lung transplantation and been diagnosed with depression.

In addition, we evaluated concurrent psychiatric records to find all those who had received transplantation and had been admitted to the inpatient psychiatric unit at Johns Hopkins Hospital or had been seen by the general hospital psychiatry consultation service.

Because no identifying patient information was used in compiling data needed for our study and our review was part of a performance improvement audit, it was exempt from review by the Institutional Review Board (IRB). A notification of such exemption was received from the IRB.

Once we had compiled a list noting patients who had undergone lung transplantation and been evaluated for depression by psychiatrists at Johns Hopkins Hospital, we examined hospital records to determine 1) the methods by which patients were diagnosed with depression and 2) the modes of treatment and possible complications.

## RESULTS

In the 9-year period evaluated, 131 patients (58 men and 73 women) received lung transplants at Johns Hopkins Hospital. Patients underwent single-lung transplants ( $N=74$ ), double-lung transplants ( $N=54$ ), or heart and lung transplantation ( $N=3$ ). The average age at the time of the transplant procedure was 55 years ( $SD=8$ ) for those receiving a single-lung transplant, 36 years ( $SD=14$ ) for

double-lung transplant patients, and 46 years ( $SD=6$ ) for those who underwent heart and lung transplantation. Patients waited an average of 396.7 days for transplantation after being placed on the appropriate list. At the time of this study, mean survival time was 687.8 days.

In total, of the 131 patients who received transplants at Johns Hopkins Hospital from 1993 to 2002, four had a documented diagnosis of depression. Diagnoses were made by attending psychiatrists in the Department of Psychiatry at Johns Hopkins Hospital via assessment of the patient's psychiatric history as well as in-depth clinical interviews modeled after the Structured Clinical Interview for DSM-III-R. Of the four patients diagnosed with depression, one had been treated solely with antidepressant medication, one with antidepressants and a brief admission to a chronic pain center, one with intensive inpatient psychiatric admission, and one with ECT. Because details of rationales for medication and other treatment choices were not clearly documented in the charts for all of the patients, we chose to describe the treatment course for the patient who received ECT.

Mr. A was a 55-year-old Caucasian man with a history significant for idiopathic pulmonary fibrosis, alcoholism, and depression who initially came to the attention of the psychiatry department when he was admitted to the chronic pain inpatient service. The patient had endured left single lung transplantation. The patient's postoperative course was complicated by prolonged intubation, numerous infections, and anoxic brain injury during a period of trial extubations. In an attempt to improve the patient's worsening mood symptoms, his psychiatrist prescribed fluoxetine. This was soon discontinued before the completion of an adequate trial of the medication because of intolerable side effects. The patient was next placed on a regimen of bupropion and methylphenidate in an attempt to help with his depression and low energy. This combination proved somewhat effective. Haloperidol at a low dose was also added, primarily to help regulate the patient's sleep.

After developing an L1 compression fracture, the patient also exhibited symptoms suggesting major depression. As a result, the general hospital psychiatry service was asked to consult on this patient. He was subsequently transferred to the inpatient chronic pain service for evaluation and treatment of his pain and depressive symptoms. Venlafaxine was substituted for the bupropion/methylphenidate combination, which because of continued residual depression was felt to be no longer effective (although the patient had remained on this combination for weeks). Although the patient seemed to show some improvement

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