

# The Efficiency of Electroconvulsive Therapy in the Treatment of Depression in the Elderly

REVIEW

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## Abstract

The Electroconvulsive Therapy (ECT) is a safe and effective treatment of depression in the elderly. With a high rate of remission may be the treatment of choice in cases of psychotic depression or when antidepressant treatment fails. Although its mechanism of action is unknown the therapeutic effects of ECT may be related to changes in cerebral blood flow. Studies confirm differences in the effects of ECT according to patient age. There are side effects related to cognitive function. ECT is as safe for elderly patients and for young patients.

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## Comment

Major depressive disorder (MDD) in the elderly is a potentially debilitating condition, which rapidly progresses to a severe stage and can be resistant to pharmacological intervention and psychotherapy. [1, 2] In this age group depression is reported to decrease the overall quality of life and because of decreased mobility, compromised food and fluid intake, and a higher incidence of lethal suicide attempts than in younger people, depression should be considered a life-threatening disease. [3, 4]

For the elderly who develop major depression, particularly in cases of psychotic depression or when antidepressant treatment fails, electroconvulsive therapy (ECT) remains a safe and effective treatment with an 80% to 90% remission rate. [5, 6] Although there is little doubt about the efficacy and safety of ECT in clinical practice, the opinions about acceptability, indications and application of ECT differ widely. [7, 8]

## Keywords

Electroconvulsive Therapy;  
Depression; Elderly.

ECT is a procedure where electrical current is passed through the brain to induce a brief generalized tonic clonic seizure that is therapeutic. This treatment is done under general anesthesia and in a controlled environment where the patient is monitored. [2] Furthermore, the increased blood flow in the thalamus following ECT may also be related to the therapeutic effects of ECT because depression is characterised by symptoms of diencephalic disturbances. [9, 10, 11] Although repeated ECT is generally necessary for ameliorating depressive symptoms, the antidepressant effects of ECT are probably associated with changes in blood flow in the anterior cingulate and medial frontal cortex and thalamus. [11]

The mechanism of action is unknown, but another study has shown a significant increase in cerebral gabaaminobutyric acid (GABA) after ECT. [2, 12] PET scans done pre-ECT and after a course of ECT showed a decrease in the cerebral metabolism in prefrontal and parietal areas, and this reduction correlated with improvement in depression. [2, 13]

Middle-aged and elderly patients have a higher remission rate after a course of ECT than younger patients. [14, 15, 16, 17] But, the association between age and ECT outcome could be dependent on the propensity of the elderly to suffer from certain types of depression. [18, 19] The efficacy of ECT was significantly superior in patients with psychotic depression. [20] Moreover, electroconvulsive therapy deserves a more prominent position in the treatment of elderly patients with severe unipolar depression. [4]

A number of case studies report efficacy of ECT in demented patients, patients with cerebrovascular disorders and depressed patients with Parkinson's disease. [8] Furthermore, ECT was well tolerated by the elderly even in patients older than 80 years. [21]

Several studies have investigated the capacity of depressed patients to consent to treatment or research. [6, 22, 23] Those who were older had more

difficulty in fully understanding all the relevant information concerning ECT. [6]

When studying cognitive side effects of ECT, it is important to take into account the most relevant treatment and clinical characteristics that may influence these cognitive side effects, such as electrode placement, age, and the severity of depressive symptoms. [24] There is convincing evidence from studies of patients of mixed ages that bilateral (usually bitemporal) ECT results in more cognitive side-effects than unilateral treatment. [25] But, in general, older patients may be more vulnerable to cognitive problems than younger patients because age in itself may lead to cognitive frailty, but also because of comorbid conditions, such as diabetes, hypertension, cerebro-vascular disease, dementia and M. Parkinson. [26]

The manner via which ECT should be administered to optimize the relationship between efficacy and negative cognitive effects remains controversial. [27, 28] Nevertheless, multiple studies have supported the safety and efficacy of ECT in the elderly, even in patients older than 75 years with multiple medical comorbidities and cognitive impairment. [14, 15, 29] One study mentioned the possibility of developing post-ECT delirium or dementia in older patients although these are not known to be side effects of ECT. [21]

ECT improved speed of information processing, mental control, memory (all aspects) and perception (visual organization), recovery of depression was especially associated with improvement of memory (verbal learning), higher speed of information processing and improvement of executive functioning. [26, 30]

When ECT was compared with antidepressants it was almost always reported to have superior therapeutic efficacy. [21] By using more specific and sensitive neuropsychological instruments we should be able to detect cognitive dysfunction related to independency in daily living after ECT. [26]

ECT is the most effective treatment in severely depressed elderly patients and can have manageable side effects, with transient adverse events and limited mortality using modern evidence-based protocols. [8, 14, 31] For those with a limited understanding of the treatment being recommended, educational interventions can be helpful. [6]

Yet, up to 20% of elderly patients may not respond to ECT, and the elderly are more susceptible to the cognitive side effects, including delirium and acute cardiovascular and other medical complications associated with ECT. [14] Age-associated structural brain changes may be associated with poorer response to ECT. [19, 32]

Alternative therapies are clearly needed for depressed geriatric patients who are resistant or intolerant to available somatic therapies. [14] Electroconvulsive therapy (ECT) is an important treatment option in late life depression [33, 34] although it was first introduced in 1938 as a treatment for schizophrenia. [11] A large number of well-designed studies support the use of drugs and ECT for the safe and effective treatment of depressed elderly individuals. [21] Importantly, this comparability in outcome across age groups was also evident 1-3 years after ECT. As the level of adverse events was not increased after ECT for subjects in any age group, we conclude that ECT is as effective and safe for older depressed patients as it is for younger ones. [19].

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