

Electroconvulsive Therapy in Geriatric Psychiatry

A Selective Review

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KEYWORDS

- Electroconvulsive therapy • ECT • Geriatric • Depression • Dementia • Cognition
- Parkinson's

KEY POINTS

- Electroconvulsive therapy (ECT) is a safe and effective treatment of geriatric patients with severe depressive illness, mania, schizophrenia, and some neuropsychiatric conditions.
- The cognitive effects of ECT are largely transient, even in elderly patients with premorbid impairment.
- ECT does not worsen the course of dementia, and is indicated for comorbid depression and agitation in dementia.
- Medical comorbidities in the older adult population may increase risk and must be considered before ECT, but do not preclude its use.

INTRODUCTION

Electroconvulsive therapy (ECT) remains an important treatment of geriatric patients with severe depressive illness and a limited number of other severe psychiatric conditions. As the United States population continues to age, the burden of psychiatric illness in this age group will continue to increase. Since its introduction, ECT has been one of the most effective treatments for psychiatric illness across demographics.¹ Numerous studies have indicated that ECT may be more effective in the elderly than in other age groups.^{2–4} Therefore, ECT must be a treatment consideration in the elderly, particularly in instances of medication resistance or intolerance. In

Disclosure: C.H. Kellner has received grant support from the NIMH; receives honoraria from Cambridge University Press; and receives fees from Psychiatric Times, UpToDate, and the Northwell Health System. J.P. Meyer and S.K. Swetter have nothing to disclose.

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Psychiatr Clin N Am ■ (2017) ■–■
<https://doi.org/10.1016/j.psc.2017.10.007>

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addition, ECT serves a vital role in treating urgent illness requiring expedient recovery, such as catatonia, or in patients with severe suicidal ideation or intent. Despite concerns regarding increasing medical comorbidities in the geriatric population, ECT remains a fairly safe treatment option with few medical contraindications.⁵ The evidence base supports ECT's use as an effective treatment in a variety of neuropsychiatric conditions in the elderly, including depression, mania, psychosis, catatonia, and Parkinson's disease (PD).

Despite ECT's efficacy, concerns regarding its side effect burden may reduce its appeal. Many clinicians remain concerned about the cognitive effects of ECT, particularly retrograde amnesia, in an aging population whose memory function may be compromised at baseline. Recent studies have examined the relationship of ECT to preexisting memory impairment and, contrary to prior assumptions, indicate that ECT may not significantly worsen these difficulties.^{4,6-9}

There has been considerable progress elucidating ECT's mechanism of action.¹⁰⁻¹² ECT uses an electrical stimulus to induce depolarization of cerebral neurons, causing a seizure in an anesthetized patient. Inducing a generalized seizure via ECT also has acute systemic effects, which must be managed in geriatric patients, who may have numerous medical comorbidities. Broadly, sympathetic tone increases during seizure development, whereas vagal tone increases at the time of the stimulus and at seizure termination. This autonomic shift may strain the cardiovascular system.¹³⁻¹⁵ Given the potential cardiovascular stress and the use of general anesthesia, specific attention must be paid to these concerns when evaluating geriatric patients for ECT.

METHODS

The authors searched the PubMed database for "electroconvulsive therapy elderly," "electroconvulsive therapy geriatric," "ECT elderly," and "ECT geriatric" with the addition of the terms reviewed later ("unipolar," "bipolar," "mania," "major depressive disorder," "catatonia," "schizophrenia," "psychosis," and "dementia"). If no data specific to the geriatric population were available, citations referring to mixed-age populations were used, and so noted in the article. Citations with content not relevant to this article were excluded.

PHYSIOLOGY OF ELECTROCONVULSIVE THERAPY

ECT uses an electrical stimulus to induce a seizure in an anesthetized patient. This seizure results in beneficial and adverse physiologic changes in the brain and other organs. Although the physiology of ECT in the elderly remains largely the same as in the general population, there are a few notable differences. First, age increases the seizure threshold (ST). The increased ST in the elderly may be caused by several factors, including decreased excitability of the brain and increased skull thickness.^{16,17} Regardless of the precise cause, an increased ST requires higher stimulus intensity to elicit an adequate seizure. Older adults also tend to have shorter seizure duration, shorter slow-wave-phase duration, and overall weaker seizure strength, based on electroencephalogram morphology with less clear onset and offset of seizure.^{16,17}

Electrode Placement

Three electrode placements have become standard in contemporary ECT practice: bilateral (BL), also referred to as bitemporal, right unilateral (RUL), and bifrontal. Other placements have been used clinically and experimentally but none has entered common clinical practice.¹⁸ Left unilateral electrode placement may be considered in those rare cases of left-handed patients with right hemisphere language dominance.¹⁹

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