Is ECT Appropriate in Old-Old Patients?

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By David T. Manly, MD [1] and Stanley P. Oakley, MD [2]

More patients are reaching the old-old demographic—those age 75 and above—with psychiatric conditions such as treatment-resistant depression. Research has shown that with some careful screening and precautions, ECT is a safe, effective treatment option for these patients.

As the population in the United States continues to age, the use and safety of electroconvulsive therapy (ECT) in elderly patients will become an increasingly important clinical issue. This is especially true in the "old-old," who are generally defined as 75 years of age and older. Although ECT is generally considered a low-risk procedure (Abrams, 1992), its use and safety in the very old and medically ill are still considered controversial by some clinicians and in the general population. Fortunately, recent studies have begun to address these important issues. A small number of retrospective studies (Casey and Davis, 1996; Cattan et al., 1990; Gormley et al., 1998) including our own (Manly et al., 2000) have shown that ECT is effective and reasonably safe in the old-old. In addition, a prospective study by Tew et al. (1999) came to the same conclusion. They found the old-old, even with greater physical illness and cognitive impairment, tolerated ECT as well as younger adults and responded as well or better.

The indications for ECT in the old-old are the same as in younger adults. The most common indication is severe major depression. ECT is often the treatment of choice in the elderly patient whose depression presents with life-threatening symptoms or behavior, such as suicidality or refusal to eat, or in patients with catatonia or psychosis. In these situations, waiting for one or more medication trials can be unwise. A history of favorable response to ECT in past episodes of severe depression should also suggest going directly to ECT.

Other important indications include severe bipolar depression, schizoaffective disorder and other psychotic disorders such as schizophrenia and bipolar mania. Neuropsychiatric disorders that respond to ECT include Parkinson's disease, neuroleptic malignant syndrome and dementing disorders with depression. Patients with less severe types of depression are often referred for ECT when they do not respond to medication trials.

Consideration of potential candidates for ECT requires assessment of potential benefits as well as potential risks. Most of the risks and complications of ECT are related to anesthesia and the physiological effects of the induced seizure. Therefore, knowledge of these effects and how they impact the cardiovascular and neurologic systems helps the clinician anticipate complications and minimize risks before the procedure.

Following the electrical stimulus, there is an initial brief parasympathetic/vagal discharge that can be accompanied by a brief period (several seconds) of asystole and a drop in blood pressure during the tonic phase, followed by an intense sympathetic surge during the clonic phase. During the clonic phase, pulse and blood pressure increase substantially, resulting in an increase in rate pressure product, which roughly correlates to myocardial oxygen demand (Abrams, 1992). Other significant physiological changes include increased cerebral blood flow and intracranial pressure and a transient increase in intraaortic pressure and intraocular pressure.

Although there are no absolute contraindications, in 1990 the American Psychiatric Association Task Force on ECT identified conditions associated with increased risk of morbidity and mortality. These include recent (less than three months) myocardial infarction or stroke or a space-occupying intracranial lesion. In these situations, the risk of untreated depression must be weighed against the risk of the procedure.

There is a slowly increasing body of experience in the anesthetic management even in these risky situations (Knos and Sung, 1993). Conditions considered "relative contraindications" several years ago can now be managed without much difficulty with appropriate consultative help. These include angina, congestive heart failure, cardiac pacemaker, anticoagulation for thrombophlebitis, severe chronic obstructive pulmonary disease and severe osteoporosis. Age in itself is not a contraindication alone when concurrent medical risks are accounted for.
The safe and successful practice of ECT in old-old populations requires that a careful and thorough pre-ECT evaluation be completed to identify potential conditions that may increase risk. Many ECT practitioners request a consultation with an internist or cardiologist to assist in pre-ECT evaluation. A careful history focusing on medications, past anesthetic experience and past ECT response, as well as cardiac, pulmonary and neurologic histories should be taken. A history of myocardial infarction, angina, congestive heart failure, valvular heart disease, lung disease, smoking, stroke or seizure disorder should also be sought. Consideration of history of diabetes mellitus is also important, because of its potential implications for the vascular system.

In this age group, an electrocardiogram and chest X-ray should be routine. Laboratory studies should include a metabolic panel with electrolytes, a complete blood count and a urinalysis. A baseline cognitive evaluation such as the Folstein Mini-Mental State Examination (MMSE) should be performed prior to the first treatment. When indicated by findings in the history and physical examination, optional studies include a computed tomography scan or magnetic resonance imaging of the head, electroencephalogram, or spinal X-rays.

The focus of these studies is to identify conditions that need to be corrected, stabilized and monitored during the course of ECT. In 1997, Applegate reviewed the evaluation and management of ischemic heart disease in the ECT patient and found, with careful screening, ECT could be used safely. Similarly, Rayburn (1997) reviewed management of congestive heart failure and valvular heart disease in this setting, noting that with appropriate precautions, ECT can be performed safely in most patients.

The procedure will be reviewed briefly, with a focus on issues relevant to managing the risk in the old-old higher risk patient. Most aspects of the modern modified ECT are the same as described for the young adult (Abrams, 1992; Weiner and Krystal, 1994). An anticholinergic agent used to be standard but is now considered optional. For patients considered at high risk for symptomatic bradycardia or asystole, a small dose of atropine (0.4 mg) or glycopyrrolate (Robinul) (0.2 mg) can be given intravenously or intramuscularly prior to the procedure. Light anesthesia is induced using a short-acting barbiturate, usually methohexital (0.75 mg/kg to 1.0 mg/kg) IV followed by succinylcholine (0.75mg/kg to 1.0 mg/kg) IV for muscle relaxation. Alternatives for induction and muscle relaxation and other anesthetic considerations for ECT were reviewed by Swartz (1993).

Prior to the procedure, the patient is pre-oxygenated; bag/mask ventilation with 100% oxygen is utilized throughout the procedure. Pulse oxymetry is used to assure adequate oxygenation. Lately, as a means of maximizing the therapeutic effect while minimizing cognitive side effects, the techniques for applying the stimulus have been receiving intense research interest. Brief pulse, square-wave instruments have replaced older sine-wave instruments; they reduce the amount of charge or energy needed to induce a seizure, while also reducing cognitive side effects.

Bilateral lead placement is the most effective, but suprathreshold (2.5 x threshold) non-dominant hemisphere unilateral lead placement seems to afford adequate efficacy with less postictal confusion (Sackeim et al., 1993). In addition, other lead placements are being investigated. For example, Swartz has proposed a modified bilateral lead placement that, in preliminary studies, seems to achieve the efficacy of traditional bitemporal placement with fewer cognitive side effects (Manly and Swartz, 1994; Swartz, 1994).

Monitoring includes pulse oxymetry, blood pressure, EKG and EEG. It is usual practice to apply a blood pressure cuff at the right lower extremity. This prevents succinylcholine from reaching the foot and allows monitoring of the motor seizure duration by direct visualization or electromyography. Recent studies, however, suggest that motor seizure duration may be a poor indicator of seizure quality. More attention is being directed to qualities of the EEG as indicators of seizure adequacy (Krystal et al., 1995). To prevent morbidity in patients with cardiac disease or hypertension, these patients may be treated immediately either before or after the stimulus with short-acting β-blockers such as labetalol (Normodyne, Trandate) or esmolol (Brevibloc) to dampen the intense sympathetic surge that accompanies the clonic phase of ECT. If given before the stimulus, however, β-blockers can shorten the duration and intensity of seizures (Abrams, 1992).

In most studies, confusion or delirium are the most common side effects in the elderly, particularly the old-old. In our own recent retrospective study comparing the outcome of ECT versus pharmacotherapy in patients 75 years or older, 10 of 39 (25.6%) ECT-treated patients experienced confusion. Other studies have shown similar rates of confusion (MulSAN et al., 1991). It is recommended that patients be monitored cognitively during the course of ECT. The MMSE can be repeated at intervals during and after completion of the ECT course.
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