The Practice of Electroconvulsive Therapy

Recommendations for Treatment, Training, and Privileging

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evidence indicates that better clinical outcome is associated with seizures that are accompanied by higher amplitude spike-and-wave activity and followed by greater postictal EEG suppression (Folkerts 1996; Krystal et al. 1995; Luber et al. [in press]; Nobler et al. 1993, [in press]; Suppes et al. 1996). However, various factors are likely to impinge on ictal and postictal EEG expression independent of treatment outcome, including patient age, treatment number, initial seizure threshold, and medication status (Krystal et al. 1993, 1995, 1996; McCall et al. 1996a, 1996b; Nobler et al. 1993, [in press]). In addition, none of the measures incorporated in ECT devices has, as yet, been validated in a manner that supports their clinical utility. Nonetheless, among patients who show inadequate or slow response to ECT, low-amplitude ictal EEG expression or an absence of postictal EEG suppression can be taken as further evidence for the need to increment stimulus dosage or switch electrode placement from unilateral to bilateral ECT.

11.8.3. Other Physiologic Monitoring

11.8.3.1. Cardiovascular Monitoring

The morbidity and mortality associated with ECT are largely cardiovascular in origin, with the greatest such risk occurring in patients who have a history of cardiac illness (Drop and Welch 1989; Prudic et al. 1987; Rice et al. 1994; Zielinski et al. 1993). Because this risk is greatest at the time of treatment, vital signs (blood pressure and pulse) and cardiac rhythms (ECG) should be monitored at frequent intervals from immediately before anesthesia administration until several minutes after seizure termination or until these measures are stable. Oscilloscopic or polygraphic ECG monitoring is required because transient postictal arrhythmias are often observed after seizure and may require intervention. Automated noninvasive blood pressure monitoring has become routine in ECT. Such automated readings should be set at the highest frequency (e.g., every minute) after anesthetic administration and until resumption of spontaneous respiration. When vital signs have stabilized, subsequent measurements may be obtained at less frequent intervals (e.g., every 5 minutes).

The capacity to provide a hard copy of the ECG should be readily available in order to document cardiac changes, provide an informed basis for consultation, and assist in the management of complications at future treatments. Some ECT devices provide ECG hard copy output at nonstandard chart speeds. If such output is entered in the patient's clinical records, the chart speed should be indicated or labeled timing marks provided. The treatment team should be cognizant of the variety of ECG changes observed during ECT, with an appreciation of those that usually do not require medical intervention (e.g., benign atrial arrhythmia or unifocal premature ventricular contractions [PVCs]) as opposed to those that typically do require intervention (e.g., ventricular tachycardia).

11.8.3.2. Oximetry

Standards of anesthetic practice require routine use of pulse oximetry to assess the adequacy of oxygenation. Oximetry is particularly valuable in patients with baseline ventilatory dysfunction, those in whom there is difficulty in maintaining an adequate airway, those at risk for prolonged apnea or seizures of long duration, or those with other conditions that raise the risk of hypoxia.

11.8.4. Electrical Safety Considerations Regarding Monitoring

For safety reasons described earlier, connection of a malfunctioning electrical monitoring device can present a hazard to the patient, particularly if there is a ground fault. Furthermore, the proper functioning of EEG, ECG, and oximetry devices is necessary to enhance the safety of the ECT procedure. Accordingly, prior to initial use, a biomedical engineer or other qualified person should be consulted to ensure the adequate functioning and safe use of physiologic monitoring devices. Maintenance and recalibration of devices should follow manufacturer recommendations and any pertinent medical standards. Adequacy of the ground in the electrical circuit should be verified.

11.9. Management of Missed, Abortive, and Prolonged Seizures

11.9.1. Missed Seizures

A "missed" seizure or subconvulsive stimulation occurs when there is no subsequent motor (tonic or clonic movements) or EEG seizure activity after electrical stimulation. There may be, however, a brief immediate contraction of some muscle groups in response to stimulation. In