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The Ideal ECT Technique or the Ideal ECT Patient:
What Should Be the Focus of Research?

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The endeavor of Tor and colleagues[1] confirms the buzz that has been around for some time. Ultrabrief pulse (UBP) right unilateral (RUL) electroconvulsive therapy (ECT) is an attractive ECT technique, since it has a strong reputation of being cognitively safe. Its antidepressive efficacy, however, is less robust than that of standard brief pulse (BP) ECT. In a meta-analysis of 6 studies, comprising a total of 689 patients, Tor et al conclude that standard BP unilateral ECT is, indeed, significantly more efficacious than UBP ECT. The latter yields lower remission rates, with a number needed to treat of 12.1. BP RUL ECT, however, has significantly more cognitive side effects.

Although the delicate balance between efficacy and side effect burden is not yet fully detailed, a substantial number of clinicians and clinics have made the transition toward the use of UBP ECT. Even in the most severely ill patients, those with chronic catatonia, this technique is advocated.[2–4]

Interesting naturalistic data on the use of UBP ECT recently presented by Galletly and colleagues[5] shed some light on the possible consequences of changing treatment protocols. In a private psychiatric hospital, after the introduction of UBP ECT, patients received 2 treatment sessions more in a course and spent on average more than 5 days longer in the hospital with this technique compared to BP ECT. A lower proportion of the patients responded to the treatment (54% vs 66.7%). These findings align with those of the meta-analysis,[1] in which patients treated with UBP ECT received a significantly higher number of treatment sessions (9.6 vs 8.7) than patients treated with BP ECT.

It seems that the field has shifted from preferring highly effective techniques and accepting the cognitive burden toward focusing on reducing cognitive side effects, even if the price is reduced efficacy. A similar evolution was seen in psychopharmacology, in which side effects of tricyclic antidepressants and lithium have been consistently exaggerated and their efficacy underestimated, while the opposite happened with the newer antidepressants. We should, nevertheless, continue to use the most efficacious treatment options, such as tricyclics, lithium, and bilateral standard pulse ECT, for our patients. It is of importance to note that most side effects of ECT are transient.[6] Sacrificing efficacy to avoid these transient side effects is perhaps not the best strategy to consider in some of the most severely ill patients we have under our care. As is shown in Tor and colleagues' meta-analysis, UBP ECT should not be the standard of care.

In our clinic, where we have studied UBP ECT,[7–9] this technique is not used routinely. In selected cases in which avoiding cognitive side effects is a primary consideration, UBP ECT is a useful treatment alternative. An example is the case of a teacher who was treated for severe depression with suicidality that swiftly remitted with BP bifrontal ECT after several failed medication trials. After he relapsed, he refused a second course because he feared cognitive side effects. He consented to a new treatment course only if "the less strong but smoother technique" he had read about could be used. He was successfully treated with UBP ECT. Choosing the less "powerful" technique may have other consequences as well. We have observed repeatedly that if, in a given patient, a "safer" technique that results in less favorable effects of ECT is selected, the burden of side effects might be heavier. This observation is, however, not supported by scientific data.

A useful contribution to the ECT literature would be a study comparing UBP ECT with the widely used "standard" pulse of 0.5 msec, rather than 1 msec. Unfortunately, most research groups will not embark on such an endeavor, since the odds of finding significant results are probably lower, as are the chances of getting this research published in leading journals.

Treatment technique and stimulus parameters, and the interaction between them, are only a few of the many factors underlying response pattern and cognitive side effect profile. Perhaps the question to answer is not what is the single most efficacious and safe technique (there is none), but which patients will respond (faster) to ECT and which patients will experience cognitive side effects—and why. Most studies, so far, have reported outcomes at the group level. Results reported are a regression to the mean. While at the group level mild cognitive side effects can be reported, at the individual level some patients will experience severe side effects (even if UBP ECT is used), whereas in others cognitive performance will improve dramatically (even if BP bilateral ECT is used). As an example, in a recent study, after ECT, no significant cognitive side effects were present at the group level (except letter fluency performance), whereas at the individual level, 1 in 10 patients showed retrograde amnesia.[10] Undoubtedly, multiple moderating

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and mediating factors underlie these individual differences.[11] Understanding the individual markers that predict a patient's path of recovery and vulnerability to cognitive side effects is a goal to achieve in future ECT research.

To conclude, undoubtedly, UBP ECT is a valuable addition to the armamentarium of the ECT clinician. Tor and colleagues' conclusion is justified. UBP ECT should be considered in patients in whom avoiding cognitive side effects, even temporary ones, is of primary importance for whatever reason. The fact that UBP ECT might produce lesser side effects should not, however, be a reason to adopt this technique as the treatment of choice in the most severely ill patients requiring an urgent response. These patients merit the fastest and most efficacious therapy available.

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REFERENCES

1. Tor P-C, Bautovich A, Wang M-J, et al. A systematic review and meta-analysis of brief versus ultrabrief right unilateral electroconvulsive therapy for depression. *J Clin Psychiatry*. 2015;76(9):e1092–e1098.
2. Rhoads JC, Votolato NA, Young JL, et al. The successful use of right unilateral ultra-brief pulse electroconvulsive therapy in an adolescent with catatonia. *Brain Stimulat*. 2010;3(1):51–53.
3. Cupina D, Patil S, Loo C. Chronic catatonic schizophrenia treated successfully with right unilateral ultrabrief pulse electroconvulsive therapy: case report. *J ECT*. 2013;29(2):134–136.
4. Kugler JL, Hauptman AJ, Collier SJ, et al. Treatment of catatonia with ultrabrief right unilateral electroconvulsive therapy: a case series [published online ahead of print September 19, 2014]. *J ECT*.
5. Galletly C, Clarke P, Paterson T, et al. Practical considerations in the use of ultrabrief ECT in clinical practice. *J ECT*. 2014;30(1):10–14.
6. Semkovska M, McLoughlin DM. Objective cognitive performance associated with electroconvulsive therapy for depression: a systematic review and meta-analysis. *Biol Psychiatry*. 2010;68(6):568–577.
7. Sienaert P, Vansteelandt K, Demyttenaere K, et al. Randomized comparison of ultra-brief bifrontal and unilateral electroconvulsive therapy for major depression: clinical efficacy. *J Affect Disord*. 2009;116(1–2):106–112.
8. Sienaert P, Vansteelandt K, Demyttenaere K, et al. Randomized comparison of ultra-brief bifrontal and unilateral electroconvulsive therapy for major depression: cognitive side-effects. *J Affect Disord*. 2010;122(1–2):60–67.
9. Spaans HP, Verwijk E, Comijs HC, et al. Efficacy and cognitive side effects after brief pulse and ultrabrief pulse right unilateral electroconvulsive therapy for major depression: a randomized, double-blind, controlled study. *J Clin Psychiatry*. 2013;74(11):e1029–e1036.
10. Dybedal GS, Tanum L, Sundet K, et al. Cognitive side-effects of electroconvulsive therapy in elderly depressed patients. *Clin Neuropsychol*. 2014;28(7):1071–1090.
11. McClintock SM, Choi J, Deng ZD, et al. Multifactorial determinants of the neurocognitive effects of electroconvulsive therapy. *J ECT*. 2014;30(2):165–176.