

The new invasive brain stimulation techniques in psychiatry

Dr. Rosa suggests that “similarly to ECT (electroconvulsive therapy), TMS needs extended periods of treatment to be clinically effective, possibly 3 weeks on average.” We have the same opinion. As Dr. Rosa pointed out, most TMS studies in depression lasted only 2 weeks. Although there were two earlier studies by Pascual-Leone¹ and Figiel² suggesting significant effect after 5 days of treatment, most subsequent studies have found only modest improvement at 2 weeks. Also, in our earlier and recent studies, clinically significant effects were only apparent at 2 weeks with very few subjects meeting response criteria at the end of one week.³ Since most antidepressant medication trial requires at least 6–8 weeks of treatment before significant effects are seen, it is very clear that longer treatment, at least 3 weeks are indicated, similar to those used in studying antidepressant drugs or ECT. Reasoning from these evidences, we have already recommended that future TMS studies should be designed for at least 3 weeks.⁴

In addition, it appears that TMS at greater than motor threshold is more effective than TMS at less than motor threshold, although this has not been formally tested in a controlled study. There also appears to be a trend toward higher numbers of stimuli having greater effects. Therefore, the upper end of antidepressant effectiveness is likely associated with longer treatment with higher intensities and a greater number of stimuli.⁴ Optimizing the antidepressant TMS use parameters will be an important task for the next decade.

In another aspect, there have been recently emerging studies hinting at the potential of TMS as a maintenance therapy. Our group recently presented data from one subject who previously had required weekly ECT to prevent relapse and who was able to maintain his mood with rTMS maintenance.⁵

Although TMS studies for the treatment of depression are clearly encouraging, at the current approach, stimulation intensity, total numbers, duration, and dosing schedules of TMS as an antidepressant are not yet fully examined. Although exploring these variables in clinical trials would be lengthy and expensive, well-designed studies in large samples are needed to elucidate and maximize antidepressant effects of TMS. We are also enthusiastic that combining TMS with functional brain imaging will help understand the effects of the use parameters and help focus the relevant clinical work.

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