# Correspondence

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## ECT and rTMS for depression

Schulze-Rauschenbach *et al* (2005) report an interesting study comparing electroconvulsive therapy (ECT) with repetitive transcranial magnetic stimulation (rTMS) for the treatment of major depression. They conclude that both are equally efficacious, but rTMS is associated with fewer cognitive side-effects.

Ultimately, a therapeutic plan that optimally helps a given individual cope with disability and recover can only be devised when the physician transcends the traditionally proven, generic insights about pathological anatomy, physiopathology and aetiology of disease, and identifies the unique characteristics of a specific patient. Therefore, therapeutic decisions should always consider the risk–benefit ratio of each treatment option for the specific patient and circumstances. The focus on differences in side-effect profile of rTMS and ECT in major depression by Schulze-Rauschenbach *et al* is thus most valuable.

In 2003 we conducted a similar study of which the authors appear to be unaware (O'Connor *et al*, 2003). We compared 14 patients with medication-refractory depression who underwent ECT with 14 who underwent rTMS. ECT had a significantly greater positive effect on mood than a 2-week trial of rTMS. The reason for this difference between our results and other published trials comparing rTMS with ECT (Janicak *et al*, 2002; Grunhaus *et al*, 2003; Schulze-Rauschenbach *et al*, 2005) is unclear. In our study, as in that of Schulze-Rauschenbach *et al*, ECT was applied unilaterally approximately three times per week for 2–4 weeks. We applied rTMS in sessions of 1600 stimuli at 10 Hz and 90% of motor threshold intensity to the left dorsolateral prefrontal cortex daily (Monday through Friday) for 2 consecutive weeks. Thus we employed 'stronger' parameters of rTMS than Schulze-Rauschenbach *et al*, who applied shorter trains and also limited stimulation to only 2 weeks. Nevertheless, in both studies ECT and rTMS may have been used at insufficient doses, since progression to bilateral ECT (UK ECT Review Group, 2003) or extension of daily rTMS to 3–4 weeks (Gershon *et al*, 2003; Rumi *et al*, 2005) were not considered.

In our study ECT exerted a deleterious but transient effect on various components of memory that was no longer detected 2 weeks after the end of treatment. However, there was evidence of persistent retrograde amnesia after ECT. Patients undergoing rTMS experienced only a modest reduction in the severity of depression but there was no evidence of anterograde or retrograde memory deficits and there was a remarkable suggestion of cognitive improvement even in those patients with no antidepressant benefits. These findings, as those of Schulze-Rauschenbach *et al*, suggest that the cognitive effects of rTMS might not be the consequence of the mood effects. The suggestion of independent effects of rTMS on mood and cognition also seems to be supported by a previous study of rTMS in major depression (Moser *et al*, 2002) and studies in patients with cerebrovascular (Rektorova *et al*, 2005) and Parkinson's disease (Boggio *et al*, 2005). Boggio *et al* (2005) showed that 10 days of rTMS treatment (15 Hz, left dorsolateral prefrontal cortex) improved cognition and depression in patients with Parkinson's disease, but this cognitive improvement was not correlated with mood change. Furthermore, there was no correlation between cognitive and motor function improvement. Thus, it appears that left prefrontal rTMS exerts differential effects on cognition, mood and motor function. Even in individuals without psychiatric illness, we have recently shown that suppression of the right hemisphere by slow rTMS can enhance verbal memory, while left-sided slow rTMS disrupts it (Kahn *et al*, 2005). Therefore, cognitive and antidepressant effects of rTMS may be the consequence of modulation of dissociable neural networks.

**Boggio, P. S., Fregni, F., Bermpohl, F., *et al* (2005)** Effects of repetitive TMS and fluoxetine on cognitive function in patients with Parkinson's disease and concurrent depression. *Movement Disorders*, in press.

**Gershon, A. A., Dannon, P. N. & Grunhaus, L. (2003)** Transcranial magnetic stimulation in the treatment of depression. *American Journal of Psychiatry*, **160**, 835–845.

**Grunhaus, L., Schreiber, S., Dolberg, O. T., *et al* (2003)** A randomized controlled comparison of electroconvulsive therapy and repetitive transcranial magnetic stimulation in severe and resistant nonpsychotic major depression. *Biological Psychiatry*, **53**, 324–331.

**Janicak, P. G., Dowd, S. M., Martis, B., *et al* (2002)** Repetitive transcranial magnetic stimulation versus electroconvulsive therapy for major depression: preliminary results of a randomized trial. *Biological Psychiatry*, **51**, 659–669.

**Kahn, I., Pascual-Leone, A., Theoret, H., *et al* (2005)** Transient disruption of ventrolateral prefrontal cortex during verbal encoding affects subsequent memory performance. *Journal of Neurophysiology*, **94**, 688–698.

**Moser, D. J., Jorge, R. E., Mones, F., *et al* (2002)** Improved executive functioning following repetitive transcranial magnetic stimulation. *Neurology*, **58**, 1288–1290.

**O'Connor, M., Brenninkmeyer, C., Morgan, A., *et al* (2003)** Relative effects of repetitive transcranial magnetic stimulation and electroconvulsive therapy on mood and memory: a neurocognitive risk–benefit analysis. *Cognitive and Behavioral Neurology*, **16**, 118–127.

**Rektorova, I., Megova, S., Bares, M., *et al* (2005)** Cognitive functioning after repetitive transcranial magnetic stimulation in patients with cerebrovascular disease without dementia: a pilot study of seven patients. *Journal of Neurological Sciences*, **229–230**, 157–161.

**Rumi, D. O., Gattaz, W. F., Rigonatti, S. P., *et al* (2005)** Transcranial magnetic stimulation accelerates the antidepressant effect of amitriptyline in severe depression: a double-blind placebo-controlled study. *Biological Psychiatry*, **57**, 162–166.

**Schulze-Rauschenbach, S. C., Harms, U., Schlaepfer, T. E., *et al* (2005)** Distinctive neurocognitive effects of repetitive transcranial magnetic stimulation and electroconvulsive therapy in major depression. *British Journal of Psychiatry*, **186**, 410–416.

**UK ECT Review Group (2003)** Efficacy and safety of electroconvulsive therapy in depressive disorders: a systematic review and meta-analysis. *Lancet*, **361**, 799–808.

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**Authors' reply:** We are glad that Fregni *et al* share our interest in side-effect profiles of rTMS and ECT in major depression and thank them for their positive judgement of our work. They draw attention to their



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related study (O'Connor *et al*, 2003), which we regretfully overlooked when we wrote our article. They point to similarities between the studies, but speculate about the reasons for the discrepant findings regarding the clinical efficacy of rTMS. We believe the following methodological differences might contribute.

First, in the study by O'Connor *et al* (2003), the level of baseline depression was different in the treatment groups: those receiving rTMS were significantly less depressed than those receiving ECT. Furthermore, those treated with rTMS were medication-free for at least 2 weeks but those receiving ECT continued to receive antidepressant medication. Finally, the duration of treatment – and the interval between initial and follow-up measurements – tended to be longer (2–4 weeks) in the ECT group than in the rTMS group (2 weeks). These features most likely contributed to the better clinical efficacy of unilateral ECT compared with rTMS in the study by O'Connor *et al*, where not a single patient treated with rTMS showed a clinically significant (50% reduction in the Hamilton Rating Scale for Depression) response.

In contrast, those treated with either rTMS or ECT in our study were matched for baseline levels of depression. They were treated for about 5 weeks on average. Antidepressant medication was kept constant in both ECT and rTMS treatment arms, and both treatments were clinically effective in about half of the patients. In principle, a comparative study of side-effects of two treatments only seems to be relevant when both modalities have a measurable clinical effect.

We agree that the effects of rTMS on mood and cognition may be independent of each other, and may point to different neural networks mediating these effects. However, the better retrograde memory performance after treatment, even in patients lacking an antidepressant response to rTMS, reported by O'Connor *et al*, is not necessarily suggestive of such a dissociation. It might also be explained by test repetition effects, which were masked in the ECT group because of enduring memory impairments. A healthy control group assessed repeatedly can be used to control for this confounding variable. We noted that patients receiving rTMS did not show stronger improvements over time than the control group for any objective cognitive measure, effectively ruling out a genuine memory-enhancing effect of rTMS as used in our study.

With the development of magnetic seizure therapy as possibly yet another form of brain stimulation for depression, the issue of relative benefits, side-effects and the duration of both will need further careful assessment. We have highlighted some of the methodological issues to be considered when studying the effects of different treatments on cognition.

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## CBT for refractory psychotic symptoms

We read with interest the study of Valmaggia *et al* (2005), particularly noting that the interventions delivered were based on a comprehensive treatment manual and delivered by therapists specifically trained in the protocol.

By the authors' admission, some aspects of the intervention showed only modest benefit over supportive counselling; indeed the only outcomes when examining the 95% CI that provide support for cognitive–behavioural therapy (CBT) are physical characteristics of hallucinations and cognitive interpretation of hallucinations. At the same time, the 95% CI for negative symptoms (Positive and Negative Syndrome Scale) suggest that supportive counselling is more effective than CBT. In addition, the effects of 16 sessions of highly structured CBT disappeared at follow-up. We were therefore very surprised at the authors' conclusions that this therapy should be available within in-patient facilities. As experienced CBT clinicians and nurses, we are acutely aware that there is a serious shortage of CBT therapists and nursing staff available to provide therapist or 'manualised' CBT. Indeed, waiting lists of over 12 months are common for therapist-provided out-patient CBT. In turn, a very large number of in-patient wards rarely, if ever, see a psychologist, let alone have the capacity to train therapists and provide 16 h of therapy! Should we not be more prudent when making claims on such scant resources by first ensuring that we have adequate evidence to support such claims? Perhaps the editor should consider making obligatory a section in every paper relating to real-world implications.

**Valmaggia, L. R., Van der Gaag, M., Tarrier, N., *et al* (2005)** Cognitive–behavioural therapy for refractory psychotic symptoms of schizophrenia resistant to atypical antipsychotic medication. Randomised controlled trial. *British Journal of Psychiatry*, **186**, 324–330.

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## Urban environment and schizophrenia

Selten *et al* (2005) cite two reasons for the increased risk of schizophrenia in Surinamese immigrants to The Netherlands. These are an increased base rate in the Surinamese population and exposure to an urban competitive Dutch society. These findings are of particular interest to researchers in Trinidad and Tobago because both countries share a similar mix of African and East Indian population and historically were simultaneously but independently developed by British and Dutch colonisers.

Interestingly, the authors noted that in their own study of Surinam and studies from Jamaica, Trinidad and Barbados no excess of schizophrenia was reported in the native countries. In addition, they argue that an overrepresentation of patients resident in Paramaribo points to an urban causation. The two reasons cited by the authors need further analysis.

The concept of urban environment causing disease is complex. Van Os (2004) proposes that the urban environment with a set of environmental factors acting between birth and the onset of illness is a risk factor for psychotic illness. However, Hutchinson & Morgan (2005) argue that the risk for psychosis is not specifically the urban environment but the social disadvantages and isolation experienced by vulnerable individuals in an urban society. These interact with perceptions of self, transgenerational expectations, cognitive processes and the urban environment to confer risk. Although both these views are tenable, is it not fair to assume that the variables described as associated with an urban environment will also be present in sub-urban or rural environments? It appears, then, that the effect lies in the confounding variables described rather than the urban effect.



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