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Six-month follow-up study of Repetitive Transcranial Magnetic Stimulation in the treatment of Resistant Major Depressive Disorder

INTRODUCTION

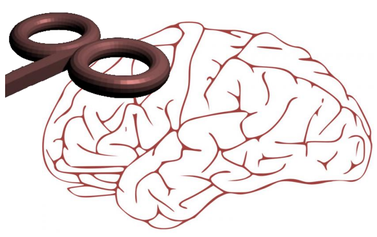
Current approaches to the treatment of Major Depression, while effective, are nevertheless associated with substantial percentages of non-responders or partial responders. Given the need for more effective, safer and more socially acceptable therapeutic strategies, alternative approaches are being investigated, such as Repetitive Transcranial Magnetic Stimulation (rTMS). Several clinical studies have been focused on the efficacy of rTMS in the treatment of resistant Major Depression, where interventions include combination of antidepressant drugs with different mechanisms of action and augmentation of somatic treatments to pharmacological therapy. In this regard, the use of rTMS as add-on treatment truly represents one of the major foci in clinical research. [1]

Object of this study was to evaluate the six-month effect on depressive symptoms and on frontal lobe abilities of rTMS used as augmentation strategy in the treatment of drug resistant Major Depression.

METHODS

A group of 30 drug resistant depressed outpatients meeting the DSM-IV TR criteria for nonpsychotic major depressive disorder was randomly assigned to one of two treatment groups: Test Group (15 patients) was treated with drugs and high-frequency rTMS over the left dorso-lateral-prefrontal-cortex; Control Group (15 patients) was treated only with drugs. Active rTMS was performed five days per week for four weeks consecutively. Psychotropic drug doses (Selective Serotonin Reuptake Inhibitors, Tricyclic Antidepressant, Atypical Antipsychotic) were required to remain stable in the four weeks preceding the trial and for its entire duration. Patients were followed up for six months and effectiveness data were gathered at baseline (T0), at the end of rTMS treatment (T1) and after 6 months (T2). Outcome measures for the evaluation of depressive symptoms consisted of Hamilton Depression Rating Scale 21-item (HAM-D) and the Montgomery Asberg Depression Rating Scale (MADRS). A neuropsychological battery for the evaluation of different frontal lobe abilities included the Frontal Assessment Battery and the Stroop Color Word Test Interference. [2] [3]

	Sample (30)	Test Group (15)	Control Group (15)
Age	51,25 ± 6,64	52,2 ± 6,17	50,3 ± 7,28
Sex	M=17 F=13	M=9 F=6	M=8 F=7

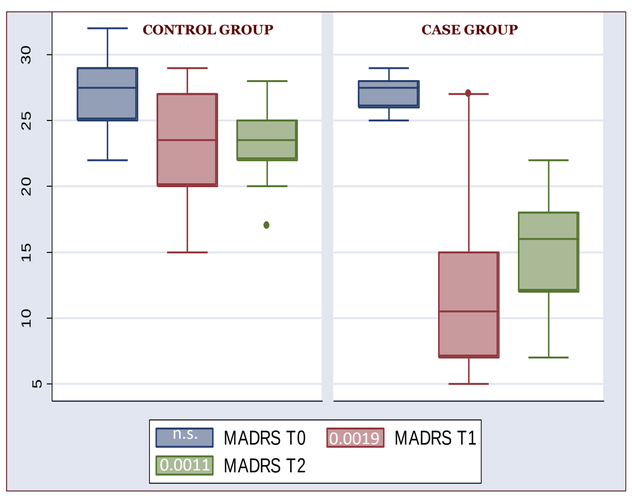


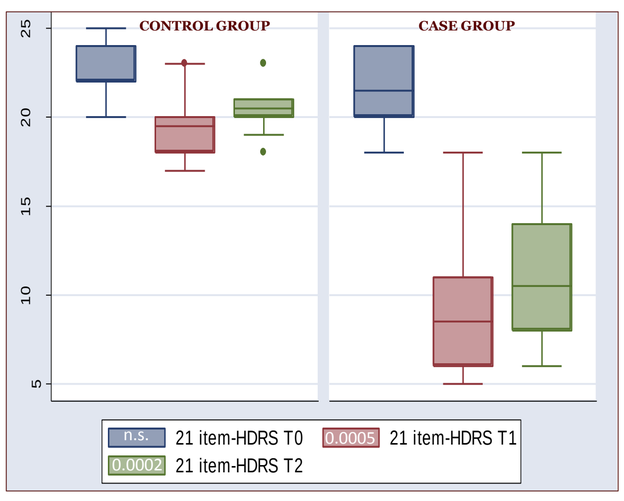
INCLUSION CRITERIA	EXCLUSION CRITERIA
• age between 45 and 65; • diagnosis of major depressive disorder (according to the criteria of DSM-IV-TR); • score ≥20 points on the 21-item Hamilton Rating Scale for Depression (HDRS); or a score ≥ 25 on the Montgomery Asberg Depression Rating Scale (MADRS); • drug-resistance to three adequate courses of antidepressants from at least two different classes in the current major depressive episode; • serious neurological evaluation was excluded performing CT or MRI.	• presence of current psychotic features; • history of any non-mood psychotic disorder; • current neurological disease; • pregnancy and any contraindication for TMS (hypoacusis, tinnitus, severe head trauma, cochlear implants, metal in the brain, skull or elsewhere in the body, implanted neurostimulator, cardiac pacemaker or intracardiac lines, medication infusion device, history of epilepsy, predisposition to seizure).

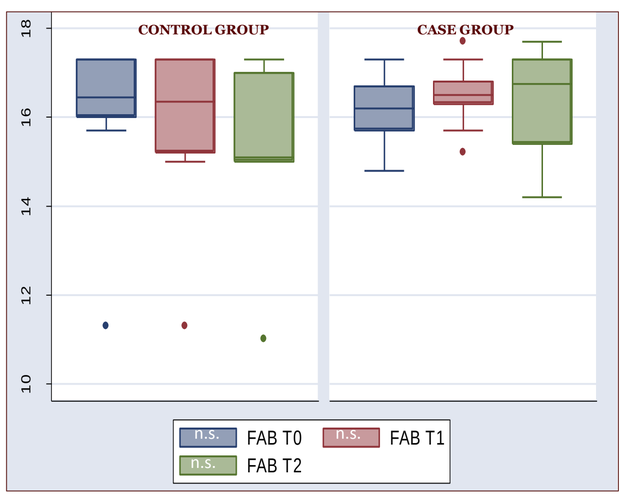
RESULTS

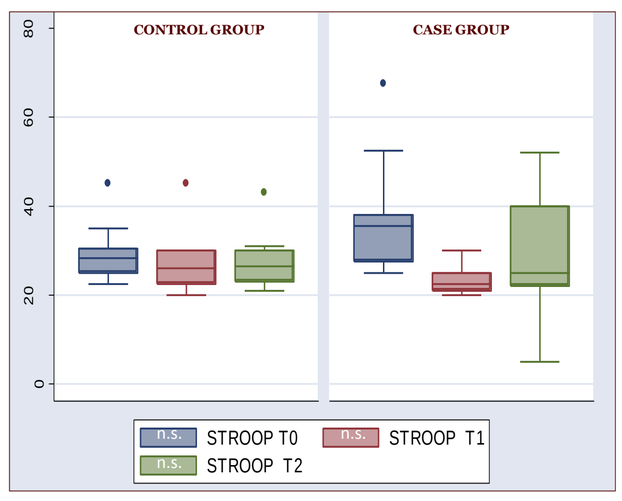
The study showed an improvement of depressive symptoms for both groups, as indexed by a reduction on Hamilton Rating Scale for Depression and on Montgomery Asberg Depression Rating Scale at the end of treatment and six months after. The Frontal Assessment Battery and the Stroop Color Word Test Interference outcome scores did not significantly differ at treatment end and after six months. Comparison of the two treated groups revealed statistically significant mood improvements in the test group, highlighting the effectiveness of rTMS as an augmentation strategy.

SAMPLE	MADRS					HDRS					FAB					STROOP				
	T0	T1	T2	p T0/T1	p T0/T2	T0	T1	T2	p T0/T1	p T0/T2	T0	T1	T2	p T0/T1	p T0/T2	T0	T1	T2	p T0/T1	p T0/T2
Test group	27.2±1.47	11.7±6.37	15.3±4.92	0.0005	0.001	21.5±2.12	9.6±4.59	11.4± 4	0.0002	0.0002	16.2±0.77	16.5±0.72	16.9± 1.12	n.s.	n.s	37.9±13.1	23.3±2.98	27.43± 15	0.0006	n.s.
Control group	27.3±2.98	23.1±4.20	23.1±3.10	0.0225	0.0098	22.5±1.71	19.4±2.01	20.6± 1.57	0.0044	0.0261	16.1±1.80	15.9±1.82	15.6 ±1.88	n.s.	n.s	29.3±6.54	27.2±7.21	27.6± 6.32	n.s.	n.s.









CONCLUSION

Left dorso-lateral-prefrontal rTMS treatment combined with drugs produced statistically significant and clinically meaningful antidepressant effects greater than single drug treatment.
Our findings demonstrate the maintenance of the antidepressant effect after six months.

Reference(s)
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No potential conflict of interest.