Magnetic Stimulation Treatment in Adolescents Depressives Patients

Marcelo Chiramberro MPh.

Helsinki University researcher.

Psychiatry specialist in training.

Depression

Mood disorders are a group of clinical conditions characterized by a major change in mood and a subjective experience of great distress.

Depression

- Patients with depression experience:

- Loss of energy and interest
- Feeling of guilt
- Difficulty in concentrating
- Loss of appetite
- Thoughts of death and suicide

Depression

-Generations after 1940 has a great risk of developing depression and this disorder is now being recognized at younger ages.

-Mood depressives disorder in adult has and incidence of 17 %.

-In adolescents the prevalence is estimated in 4 % - 8 %, with a male –to-female ratio of 1:2.

-Suicide is the third leading cause of death in adolescents, and depressive disorders are strongly correlated with suicide attempts (E. Croarkin et al., 2010)

Depression

- 40 % of adolescents do not show an adequate clinical response to:

- Anti-depressive medication
- Psychotherapy
- Medication- psychotherapy combination

(March et al., 2004; Brent et al., 2008).

Depression

- Selective Serotonin Reuptake Inhibitors (SSRIs) first-line medication (Bridge J. et al 2007)
- Studies suggest a significant rise in suicidal thinking in adolescent in treatment with SSRIs. (Hammad et al., 2006).
- High risk of developing side effects.

Depression

Adherence or motivation to the long medicine treatment in the adolescents and his family is difficult to support.

Until today we have not sham-controlled randomized trial publication of rTMS treatment in adolescents depressives patients.

rTMS in Adult Depressive Patients

Daily Left Prefrontal Transcranial Magnetic Stimulation Therapy for Major Depressive Disorder

A Sham-Controlled Randomized Trial

Mark S. George, MD; Sarah H. Lisanby, MD; David Avery, MD; William M. McDonald, MD; Valerie Durkalski, PhD; Martina Pavlicova, PhD; Berry Anderson, PhD, RN; Ziad Nahas, MD; Peter Bulow, MD; Paul Zarkowski, MD; Paul E. Holtzheimer III, MD; Theresa Schwartz, MS; Harold A. Sackeim, PhD

Arch Gen Psychiatry. 2010;67(5):507-516.

rTMS in Adult Depressive Patients

- 199 antidepressant drug–free patients.
- Minimal adverse effects.
- The proportion of remitters were 14.1% active rTMS and 5.1% sham arm.
- The number needed to treat was 12.

Arch Gen Psychiatry. 2010;67(5):507-516.

rTMS Treatment in Depressive Adolescent Patients

In the light of the favourable results in the lasts rTMS studies in adult major depressive patient and the different problems that medication treatments have in adolescents, we need to investigate and to find another treatment options for depression in adolescents.

Material and Methods

- We enrolled 4 patients with age 15-17 year old from the adolescent psychiatry ward of the Helsinki University Central Hospital, with moderate or severe unipolar major depressive episode according to ICD-10 and DMS-IV.

Material and Method

- Diagnosis was verified with Structured Clinical Interview for DSM Disorders (SCID).
- All patients have a HAM-17 score > 18
- 2 months with anti-depressive medication without clinical response.
- All patients gave written consents to paticipate in the study.

Exclusionary Criteria

- Schizophrenia
- Schizoaffective disorder
- Other functional psychosis
- Bipolar illness
- Alcohol or drug abuse
- Axis II diagnosis of Cluster A or B
- Suicidal risk
- Mental retardation.

Material and Method

- Mood was rated with:
- HAMD-17, BDI, MADRS before starting rTMS treatments.
- BDI and MADRS weekly for 4 weeks.
- HAMD-17, BDI, MADRS after 4 weeks of treatment.
- HAMD-17, BDI, MADRS 1month following completion of rTMS.

Material and Method

- RTMS was administered using a Magstim Rapid2® magnetic stimulator (Magstim Company Ltd., U.K.)
- Focal 70-mm figure-of-eight coil
- The coil was centred over the left dorsolateral pre-frontal cortex 5 cm anterior to the optimal location for eliciting motor evoked potentials (MEPs) in the contralateral first dorsal interosseous (FDI) muscle.

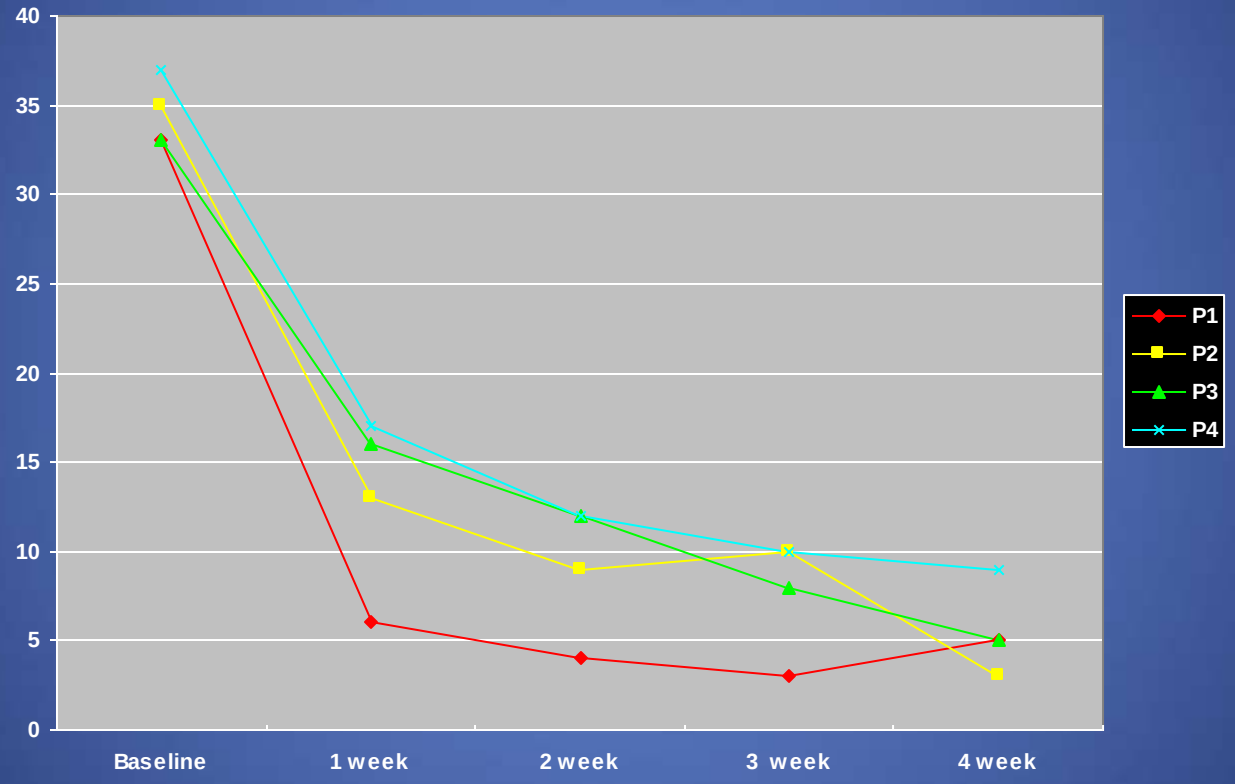
Material and Method

- Stimulation was performed:
- Left prefrontal cortex at 120% resting motor threshold.
- Frequency 10 Hz.
- 60 train of 5 sec.
- Inter-train interval 25 sec.
- 3000 stimuli per day, 5 days a week, 4 weeks.

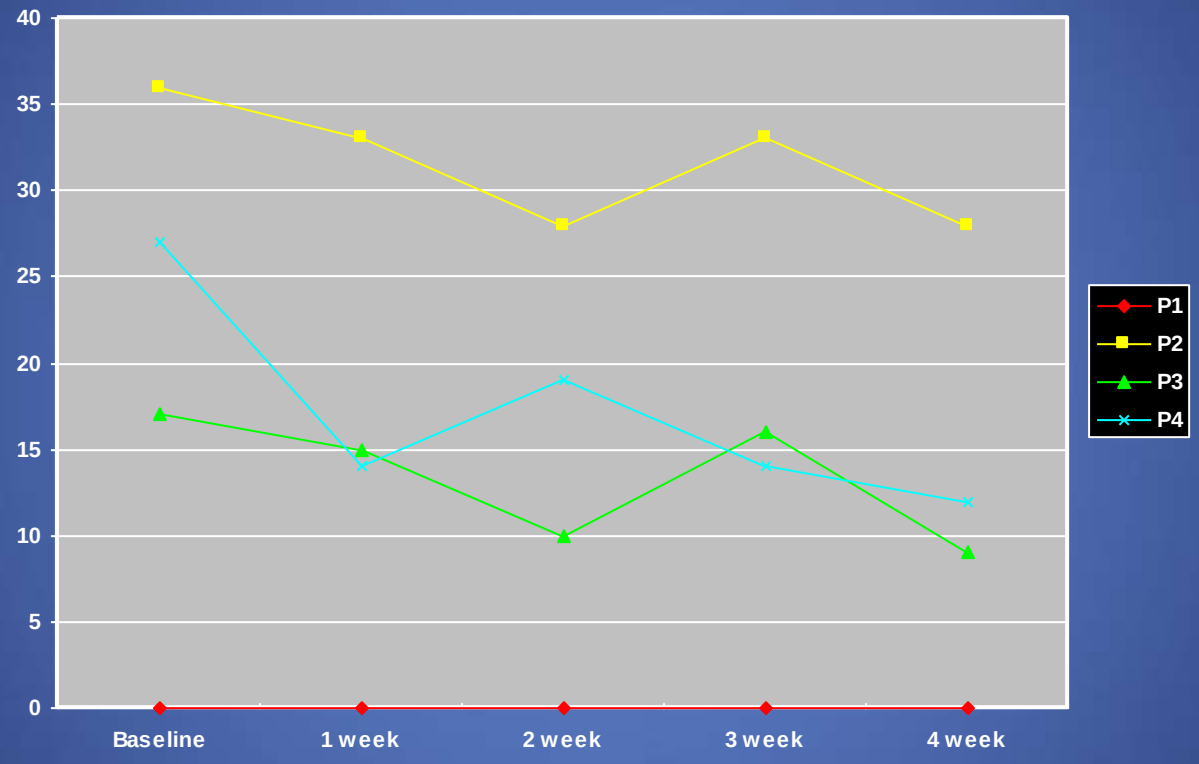
Results

- Patients included were 3 female and 1 male.
- 3 patients had prior psychiatry hospitalization and suicide attempt.
- BDI decreased 22 % in the first week and 42,5 % after 4 weeks of treatment.
- MADRS decreased 60 % in the first week and 85 % after 4 weeks.
- 3 patients remitted (considered with HAMD-17 below 7) after 4 weeks of rTMS treatment.
- During the 4 weeks of treatment, adverse effects have not been observed.

MADRS Score


40
35
30
25
20
15
10
5
0
Baseline
1 week
2 week
3 week
4 week
P1
P2
P3
P4

BDI Score


40
35
30
25
20
15
10
5
0
Baseline
1 week
2 week
3 week
4 week
P1
P2
P3
P4

BDI,MADRS and HAM-17 Score (mean)

	Baseline	1 Week	4 Weeks.
BDI	20	15,5	11,5
MADRS	34,5	13	5,5
HAM-17	27,5		5

Conclusion

- This study provides pilot evidence of the safety and tolerability of high-dose rTMS and some evidence about the potential effectiveness of rTMS.
- It is important to emphasize that during the treatment period, effects adverse have not been observed, although we used high stimulation frequency and pulses

Conclusion

- We observed a clear-cut decrease in MADRS scale beginning in the first week and during all the treatment period.
- A similar but more modest change in the BDI-score was also observed.
- The patients we have evaluated tolerated the treatment well.

Conclusion

These results, although very preliminary, call for a sham controlled study of the effect of rTMS on adolescent depression in the future.

Thanks