



COMPARISON OF INTERMITTENT THETA BURSTS AND STANDARD HIGH FREQUENCY PROTOCOLS FOR RTMS IN PATIENTS WITH DEPRESSION IN A CLINIC BASED IN MANCHESTER, UK.

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INTRODUCTION

Repetitive Transcranial Magnetic Stimulation (rTMS) has given a new ray of hope for patients who do not wish to consider, experience significant side-effects from or show poor response to conventional antidepressants. Since 2008, high-frequency 10Hz TMS has been a US FDA-approved treatment for treatment resistant depression (O'Reardon et al. 2002). NICE approved rTMS for similar indications in 2017.

Standard High Frequency (SHF) treatment with five 37.5 minute-long 10Hz TMS treatments per week for 4-6 weeks showed that approximately half of the patients "respond" to treatment. (Carpenter et al. 2012; George et al. 1995b). However, the other half of patients show limited response and over time, intermittent Theta Bursts (iTBS) was conceived as a new treatment regime to help improve response rates which is administered over 2-3 weeks.

Intermittent Theta Burst Stimulation is a potentially faster, more efficient treatment for depression. iTBS stimulates the cortex using short triplets of 50Hz stimulation for only 600 pulses per session (Huang et al. 2005). A recent multi-site clinical trial showed that 600 pulses of iTBS for depression had non-inferior effects compared with 3000 pulses of 10Hz TMS, maintaining response rates of around 50% (Blumberger et al. 2018). This pivotal trial led to iTBS also becoming a US FDA-approved for the treatment of Depression in 2018. Intermittent Theta Burst Stimulation (iTBS) is a newer form of rTMS that can be delivered in 3 minutes compared to 37.5 minutes for a standard 10Hz treatment session.

AIM

Our aim was to find out whether Intermittent Theta Burst Stimulation is indeed, a more effective method of treatment for Depression compared to Standard High Frequency protocol in normal clinical practice.

METHOD

In our clinic based in Manchester UK, we commenced Intermittent Theta Burst Stimulation protocol to treat patients with Depression in 2019. Data was collected retrospectively and this was compared with patients receiving Standard High Frequency rTMS treatment. Hamilton Depression Rating Scale (HDRS) was used as a validated tool to determine the response to treatment. Each group contained 8 patients and their initial and final rating scale scores were included in this study.

RESULTS

Eight patients who received Intermittent Theta Bursts Stimulation (iTBS) protocol and 8 patients who received Standard High Frequency (SHF) protocol were included in this study.

All 16 patients tolerated the treatment well and reported no side effects. Patients who received SHF protocol showed a remission rate of 37.5% (3/8) and response rate of 50% (4/8). Patients who received iTBS protocol showed remission rate of 75% (6/8) and response rate of 87.5% (7/8).

CONCLUSIONS

Both treatment protocols were well tolerated by patients. Intermittent Theta Burst Stimulation protocol showed far superior results compared to Standard High Frequency protocol within our patient groups. In addition, iTBS was a faster treatment regime with majority of patients completing the treatment in 2-3 weeks compared to 4-6 weeks of treatment with the SHF protocol. Patient satisfaction was seen to be high with Intermittent Theta Burst Stimulation compared with Standard High Frequency protocol.

The authors are aware of the small sample sizes in this study. We believe that the study serves to highlight the need for further robust research in this area.

Table 1-Standard High Frequency Protocol-HDRS

	1	2	3	4	5	6	7	8
Initial score	22	18	19	22	14	24	31	18
End Score	4	16	12	10	6	13	24	9

Table 2-Intermittent Theta Bursts Protocol - HDRS

	1	2	3	4	5	6	7	8
Initial Score	22	17	30	30	13	20	28	15
End Score	10	5	7	21	4	6	8	8

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