**Supplemental Methods:**

rTMS Protocols:

rTMS treatments were delivered with either a MagPro X100 (Mag-venture), Magstim Horizon (Magstim), Magstim Super Rapid2 (Magstim),or Neurostar (Neuronetics) device. Resting motor threshold (RMT) defined as the minimum stimulus intensity necessary to elicit an overt motor response in the right abductor pollicis brevis (APB) muscles for ≥50% of applied stimuli was determined for each participant before the first treatment. All patients received at least 30 rTMS treatment sessions beginning with high frequency left (HFL) rTMS, consisting of 10 Hz stimulation to the left dorsolateral prefrontal cortex (L‐DLPFC). L-DLPFC was targeted using the Beam F3 method on Magstim and Magventure devices and using the 5.5 cm rule for Neurostar devices1,2. We increased intensity to 120% RMT as tolerated over the first five treatments. Parameters were adjusted using a measurement-based care paradigm as previously described in which subjects unable to tolerate 10 Hz stimulation or demonstrating limited improvement (<20% on all scales) after 10 treatments underwent protocol adjustments to optimize response and tolerability3–11. These adjustments consisted of addition of the excitatory stimulation not initially received (either 10 Hz or iTBS) to left DLPFC or 1 Hz stimulation to a right hemisphere target. The measurement-based care paradigm was periodically updated over the study period to incorporate new findings from the scientific literature (i.e., proven efficacy of iTBS and of shorter inter-train intervals [ITIs])3,4,8–11.

**Supplemental Results:**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Total Sample** | **Age ≥60** | **Age <60** |
| **Age**, Mean (SD) | 45.8 (16.6) | 67.8 (6.2) | 38.8 (12.2) |
| **Female**, % | 55.2% | 56.5% | 55.0% |
| **Male**, % | 44.8% | 43.5% | 45.0% |
| **Baseline IDS** (0-84), Mean (SD) | 43.5 (10.7) | 41.5 (9.8)\*\* | 44.0 (10.8)\*\* |
| **Baseline PHQ9** (0-27), Mean (SD) | 17.7 (5.1) | 16.0 (5.4)\*\*\* | 18.0 (4.9)\*\*\* |
| **Baseline POMS** (-20-200), Mean (SD) | 56.6 (17.0) | 51.3 (17.0)\*\*\* | 57.8 (16.6)\*\*\* |
| **Baseline HDRS** (0-52), Mean (SD) | 20.4 (6.0) | 19.0 (5.8)\* | 20.8 (6.0)\* |

 **Supplemental Table 1. Demographic characteristics by categorical age group:** Demographic and baseline clinical characteristics of subjects delineated by age group (under 60 or at least 60 years old). \* notes statistically-significant differences at p<0.05 level, \*\* notes significant differences at p<0.01 level, and \*\*\* notes significant differences at p<0.001 level between age groups on Mann-Whitney U test or Fisher’s Exact test. Age was not statistically-tested.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **10% at Session 5***Hazard Ratios* | **20% at Session 10***Hazard Ratios* | **Rate of Early Improvement***Hazard Ratios* | **Baseline Severity***Hazard Ratios* |
|  |  | ***Age ≥60*** | ***Age <60*** | ***Age ≥60*** | ***Age <60*** | ***Age ≥60*** | ***Age <60*** | ***Age ≥60*** | ***Age <60*** |
| **IDS** | *Response* | 2.11  | 2.68  | 3.23  | 4.58  | 2.08  | 2.20  | 0.96  | 0.98  |
| *Remission* | 1.45  | 2.24  | 2.41  | 3.77  | 1.49  | 1.87  | \*0.90  | \*0.94  |
|  |  |  |  |  |  |  |  |  |  |
| **POMS** | *Response* | 2.04  | 2.16  | 3.97  | 4.41  | 1.50  | 1.54  | 0.99 | 0.99 |
| *Remission* | 1.49  | 2.16  | 3.22  | 3.42  | 1.40  | 1.54  | 0.98  | 0.99  |
|  |  |  |  |  |  |  |  |  |  |
| **PHQ9** | *Response* | 1.81  | 2.39  | 4.06  | 3.47  | 3.06  | 3.76  | 0.98 | 0.98 |
| *Remission* | 1.45  | 2.24  | 1.64  | 3.23  | \*\*1.22  | \*\*2.60  | 0.86  | 0.89  |
|  |  |  |  |  |  |  |  |  |  |
| **HDRS** | *Response* | 5.76  | 3.63  | 2.99  | 3.28  | 4.42  | 6.50  | 1.03 | 1.01 |
| *Remission* | 1.17  | 1.16  | 2.18  | 1.55  | \*0.65  | \*22.8  | 0.73  | 0.88  |
|  |  |  |  |  |  |  |  |  |  |
| **≥1 Scale** | *Response* | 2.57  | 2.28  | 3.56  | 4.06  |  |  |  |  |
| *Remission* | 2.32  | 2.01  | 3.73  | 3.73  |  |  |  |  |

 **Supplemental Table 2. Effects of per unit differences on treatment outcome by age group:** Hazard Ratios (HR) from Cox Proportional Hazards Models identifying effects of 1)achieving 10% improvement by session 5 on each scale or on at least one scale, 2)achieving 20% improvement by session 10 on each scale or on at least one scale, 3)per unit rate of improvement by scale over the first 10 sessions, and 4) per unit effect of higher baseline severity by scale on likelihood of achieving response or remission. HR above 1 indicates greater likelihood per unit improvement of achieving response or remission. \* significant difference between age groups at p<0.05 level, \*\* significant difference between age groups at p<0.01 level.

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