Summary

TMS in Psychiatry: A Practical Update

Presented by:
Simon Kung, MD

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Introduction to TMS: Background and Technical Aspects

- TMS is a noninvasive, outpatient brain-stimulation procedure that does not cause cognitive impairments or memory loss.
- There are numerous parameters of stimulation, including location, frequency, number of pulses, and intensity.
- The most common parameters for depression are left-sided DLPFC at 10 Hz, with 3000 pulses each session for 30 sessions at 120% of motor threshold.

FDA-Approved TMS Devices and Newer Protocols

- There are 5 FDA-approved devices.
- The most common coil is the figure-of-eight coil (including the iron core), but there is also the deep H-coil.
- Newer treatment protocols allow treatment to be finished in less than 37 minutes.

Possible Mechanisms of Action

- Actual mechanisms of action are unknown.
- The leading theory is the dorsolateral prefrontal cortex is underactive, and stimulation results in direct and downstream positive effects via a “depression circuit.”

Efficacy of TMS for Depression: Results from Clinical Trials

- In randomized trials, active versus sham response rates are not impressive (less than 37% for active), and absolute remission rates are also low but at least twice as much for active than for sham.
- In an open-label trial of about 300 patients, response rate by PHQ-9 was 56%.
- A small study (n=120) of 1-year durability showed 62% were still in response, although 36% needed more TMS and 55% to 75% had to continue on medication.
- There is not enough evidence for maintenance TMS.

TMS in OCD: Basics and Latest Updates

- BrainsWay Deep TMS is now FDA approved for OCD.
- Time is needed to determine the clinical experience with this device and when insurance will cover this treatment.
TMS Safety: Results from Clinical Trials

- TMS does cause physical discomfort at the stimulation site, which is tolerable and by the end of the first 1 to 2 weeks of treatment is minimal.
- Site pain, headache, and facial twitching are possible and common.
- Risk of seizures is very low (1 in 30,000 treatments).
- There is no concern regarding cognitive side effects of TMS.

TMS in Clinical Practice: Patient Selection, Insurance Considerations and Logistic Aspects

- Efficacy of TMS is similar to antidepressants, but not as good as ECT.
- If insurance covers TMS, there might be requirements such as 4 failed antidepressant or psychotropic trials.
- Use caution with history of seizures; ferromagnetic materials within 30 cm of coil is contraindicated.

Research Applications and Off-Label Uses

- There are numerous research studies regarding other psychiatric uses for TMS.
- Off-label use for bipolar depression, adolescents, geriatric patients, OCD, and certain types of pain seems reasonable.
- There is not enough evidence for its use with schizophrenia, addiction, autism, or tinnitus.

rTMS Summary

- rTMS is a noninvasive, brain-stimulation outpatient treatment for moderate-to-severe depression.
- Response rate is about 56% in open-label trials.
- Results are comparable to antidepressants.
- There are few side effects, which are tolerable.
- An increasing number of US insurance companies are covering TMS.