Title- Use of transcranial magnetic stimulation in refractory depression

Excerpt – Transcranial magnetic stimulation could be a novel therapy for people who have depression that fails to respond to antidepressant medication.

Transcranial magnetic stimulation is a noninvasive, painless method in which specific areas of the brain can be exposed to electromagnetic pulses. This technique has numerous applications in psychiatry. One form of transcranial magnetic stimulation is called theta-burst stimulation, in which electromagnetic pulses are applied in short bursts or pulses instead of continuous stimulation. Approximately one-thirds of people with depression fail to respond to antidepressants - these cases are called 'refractory'. Since theta-burst stimulation has been shown to exert long-lasting effects on the brain, scientists conducted a study investigating the efficacy of theta-burst stimulation in depression. The results are published in the journal *Brain.* Previous studies guided the scientists' decision to apply stimulation to a part of the brain called the prefrontal cortex.

The scientists recruited 60 patients with refractory depression and divided them into four groups – subjects that received continuous theta-burst stimulation; intermittent theta-burst stimulation; a combination of continuous and intermittent theta-burst stimulation, and sham (placebo) theta-burst stimulation. After undergoing a medical examination to rule out major illnesses, subjects were given a series of tests to obtain a score of depressive behavior. Theta-burst (or sham) stimulation was given for 2 weeks, after which the subjects were tested again.

This was the first large-scale, randomized controlled trial investigating theta-burst stimulation for refractory depression. The scientists found that the treatment was safe and well-tolerated, and the side effects were mild. All groups (including sham) exhibited a decrease in depressive score after theta-burst stimulation. The group that received a combination of continuous and intermittent stimulation showed the biggest effect. Although more studies need to be done regarding the mechanism by which theta-burst stimulation produces an anti-depressant effects, this study may give hope to people with refractory depression.