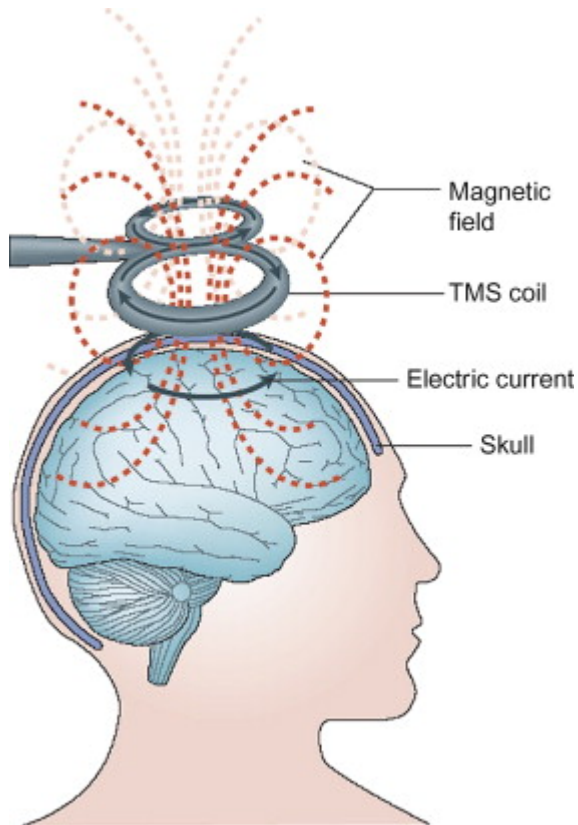


Case series on effect of Transcranial Magnetic Stimulation (TMS) on motor recovery after spinal insult



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Background

- Transcranial magnetic stimulation (TMS)
 - Modulate activity in cortical region via magnetic field induced by passing alternating current through metal coil
 - Established effect for motor rehabilitation for stroke
 - How about application of spinal cord insult?
- Traditionally peripheral stimulation is advocated in spinal insult cases.
 - Can transcranial stimulation induce similar motor rehabilitation effect as peripheral stimulation?
- The aim of this case series is to explore effect of intermittent theta burst (iTBS) of TMS on motor recovery after spinal insult.



Methodology

- Retrospective single center case series for spinal insult in Queen Elizabeth Hospital
- 3 cases of spinal insult, without significant neurological recovery for at least 2 months of intense physiotherapy, received iTBS with intermittent theta burst pattern in 2019.
- Total 10 sessions of iTBS were performed for each cases followed by physiotherapy.
- Limb power and functional level were analyzed before treatment, immediate post-treatment, 3 months post-treatment and 6 months post-treatment.

Result

- All 3 cases had clinical and functional improvement after TMS and the effect could be sustained at 6 months

Case 1

- Cervical spinal tumor
- Improvement of his right hand-grip power from 9.6kg/f to 10.4 kg/f
- Limb power remain 4/5.

Case 2

- Thoracic spinal tumor
- Present with left LL weakness
- improve left LL power from 0 to 4/5
- functionally improve from unable to walk to walk with stick.

Case 3

- Thoracic spinal tumor
- Present with left LL weakness
- Improve left LL power from 4 to 5/5
- functionally improve from not able to run to being able to run on treadmill.

Discussion

- Improvement due to natural recovery from operation and traditional physiotherapy?
 - All 3 cases selected had already reached a plateau of motor rehabilitation with traditional physiotherapy for at least 2 months to unmask the effect of natural recovery or pure physiotherapy.
- Any major side effect?
 - In our cases, all 3 cases did not have any major side effects
- Sustainability of improvement?
 - Latest follow up within this half year
 - Sustainable from post 6 month status

Conclusion

- Clinical and functional improvement achieved
- No major side effects in this case series
- Sustainable improvement both clinically and functionally.
- TMS in spinal insult cases appeared to be safe and effective yet large scale randomized controlled trials are required for confirmation.