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A – Study Design  
B – Data Collection  
C – Statistical Analysis  
D – Data Interpretation  
E – Manuscript Preparation  
F – Literature Search  
G – Funds Collection

# BRIGHT LIGHT THERAPY MAY BE A THERAPEUTIC OPTION FOR TOURETTE'S SYNDROME

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## SUMMARY

*This is the first report illustrating the clinical efficacy of Bright Light Therapy (BLT) for Tourette's syndrome. The etiopathogenesis of Gilles de la Tourette's syndrome has not been ascertained, but the frontal-subcortical neural pathways seem to be involved. The syndrome is frequently associated with attention-deficit/hyperactivity disorder, obsessive-compulsive disorder, and behavior problems. The efficacy of BLT was observed in two 15-year-old male patients 4 years after the onset of the syndrome, which occurred with involuntary, repetitive muscle movements and vocalizations. The results suggest that its effect is slightly superior to that of the placebo.*

**Key words:** frontal-subcortical neural pathways, attention-deficit/hyperactivity disorder, obsessive-compulsive disorder

## **CASE REPORT**

Sudden, involuntary, repetitive muscle movements (motor tics) and vocalizations (vocal tics) characterize Tourette's syndrome (TS), which was first described by the neurologist Gilles de la Tourette in 1885. The nature and complexity of the tics are usually variable over time, with natural waxing and waning in frequency and severity. There are also associated behavioral problems, such as obsessions and compulsions, inattention, hyperactivity, and impulsivity. Symptom onset typically occurs during childhood or early adolescence.

The etiopathogenesis of Gilles de la Tourette's syndrome has not been ascertained, but the frontal-subcortical neural pathways seem to be involved. The syndrome is frequently associated with attention-deficit/hyperactivity disorder, obsessive-compulsive disorder, and behavior problems. Krause et al. (2002) and Nomura et al. (2003) describe hypofunction of the nigrostriatal dopamine system. Pogarell et al. (2007) report that repetitive transcranial magnetic stimulation (rTMS), also a brain activating method, increases striatal dopamine levels. That is why we assumed that Bright Light Therapy (BLT) might also have a similar effect.

Bright Light Therapy consists of exposure to daylight or to specific wavelengths of light using lasers, light-emitting diodes, fluorescent lamps, dichroic lamps, or very bright, full-spectrum light — by a so-called light box. The light is administered for a prescribed amount of time and, in some cases, at a specific time of day. Light therapy which strikes the retina of the eyes is used to treat circadian rhythm disorders, such as delayed sleep phase syndrome, and can also be used to treat seasonal affective disorder, with some support for its use also with non-seasonal psychiatric disorders.

The efficacy of BLT was observed in two 15-year-old male patients 4 years after the onset of the syndrome, which occurred with involuntary, repetitive muscle movements and vocalizations. There were no triggering factors or accompanying symptoms. A routine EEG was normal, with the absence of epileptiform activities. The patients received BLT (2500lux once a day in the morning for 2 weeks). Six days after the start of treatment, improvement of both the involuntary muscle movements and the vocalizations was noticed (Yale Global Tic Severity Scale: total motor score decreased from 19 to 16, total phonic score decreased from 17 to 14). Sham control (6 weeks later, same duration) revealed scores of 17 and 15 respectively.

## **CONCLUSION**

This is the first report illustrating the clinical efficacy of Bright Light Therapy (BLT) for Tourette's syndrome. These results suggest that its effect is slightly superior to that of placebo. Further studies are required to confirm these results.

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