

Treating Tourette's Syndrome

Tourette's Syndrome is a "hyperkinetic movement disorder... that involves phonic and motor tics." These motor tics present before age 18 and with a wide range of severity (Seideman, M. F., and Seideman, T. A. 2020). In 2019, the AAN (American Academy of Neurology) published the recommended treatment guidelines for Tourette's Syndrome. In the absence of a recommended treatment method, pharmacologic treatment is selected using multiple available data, individual provider preference and experience, consideration of side effect profiles of variant agents, lifestyle considerations, and presence of comorbid diagnoses (Seideman, M. F., and Seideman, T. A. 2020).

Pharmacologic Options for Treating Tourette's Syndrome

The FDA has approved only 3 treatment agents for Tourette's Syndrome i.e., aripiprazole, pimozide, and haloperidol. However, there is a wide of treatment drugs that are clinically used i.e., adrenergic agonists (guanfacine and clonidine), botulinum toxin in specific situations, and atypical and typical antipsychotics (Seideman, M. F., and Seideman, T. A. 2020).

Non-Pharmacologic Options for Treating Tourette's Syndrome

Non-pharmacologic treatment approaches offer potential alternatives for patients not responding to drug therapy and also help avoid systemic drug side effects. The AAN recommends two main treatment approaches for Tourette's Syndrome (Seideman, M. F., and Seideman, T. A. 2020).

- i. Deep Brain Stimulation (DBS). This method involves inserting an electrode in the patient's brain to activate electrical activity in specific brain regions and neuromodulation of improperly functioning regions. AAN recognizes DBS as a possible treatment method in cases of multidrug treatment failure.

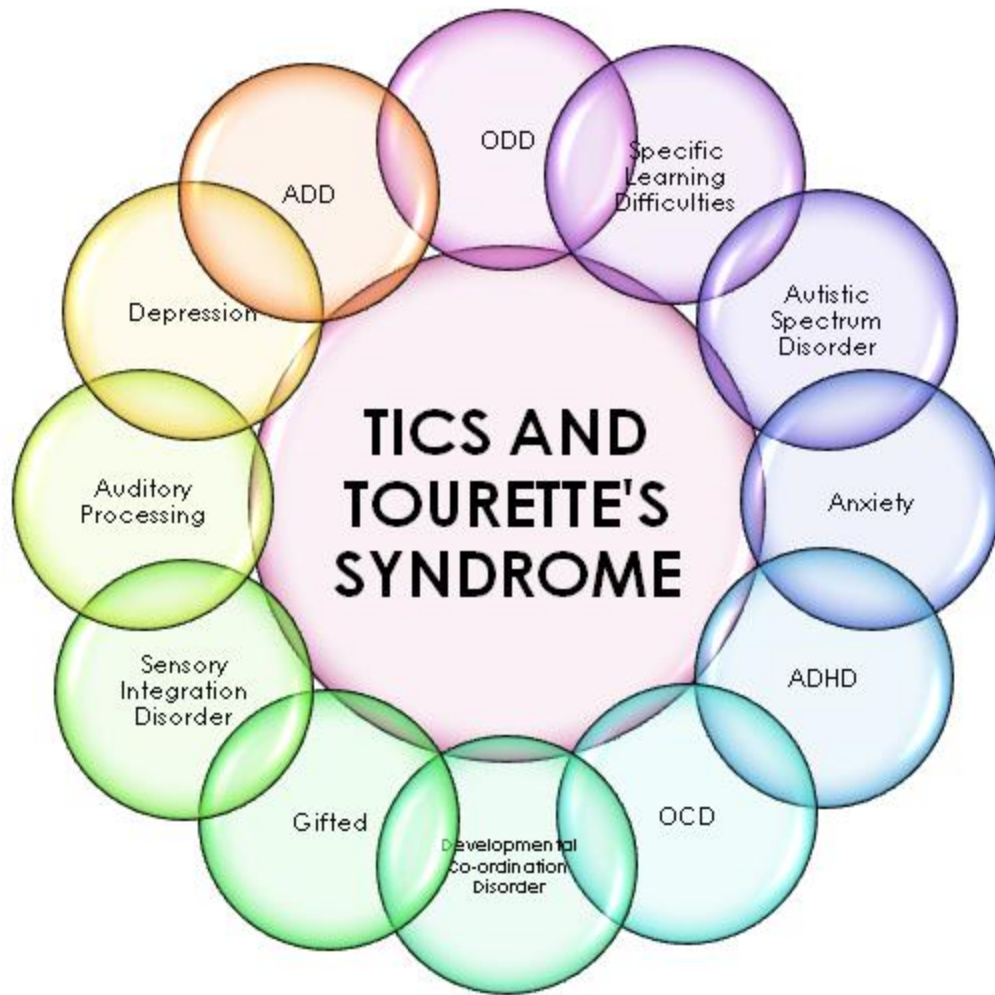
- ii. Behavioral Therapy i.e., Comprehensive Behavioral Intervention for Tics (CBIT). This is the recommended non-invasive treatment method for Tourette Syndrome. CBIT involves 3 types of therapy i.e., relaxation therapy, habit reversal training, and awareness training.

Drug	Dosage Information	Side Effects*	Comments	Effect on Tic Severity ²⁰
Clonidine	Initiate at 0.05 mg nightly and increase by 0.05 mg every 3–7 days Usual range: 0.05–0.4 mg/day divided into 2–3 daily doses Maximum dose: 0.6 mg/day	Sedation, dry mouth, dizziness, decreased blood pressure, decreased heart rate, skin irritation (with patch)	May provide benefit for tics and ADHD symptoms when both conditions are present. Some patients may benefit from a trial of patch once stabilized on oral daily dose. Discontinue dose gradually to avoid rebound hypertension.	Probably more effective than placebo
Guanfacine	Initiate at 0.25–0.5 mg nightly; increase weekly Usual range: 1.5–4 mg/day divided twice daily Maximum dose: 4 mg/day	Sedation, dry mouth, dizziness, headache, fatigue, decreased blood pressure, decreased heart rate, QTc interval prolongation (extended-release formulation)	May provide benefit for tics and ADHD symptoms when both conditions are present. Monitor for QTc prolongation. Discontinue dose gradually to avoid rebound hypertension.	Possibly more effective than placebo
Haloperidol	Initiate at 0.5 mg daily; increase by 0.5 mg weekly Usual range: 0.05–0.075 mg/kg/day divided in 2–3 daily doses Maximum dose: 3 mg/day	Drowsiness, movement disorders	FDA approved for TS-related tics. Reserved for significant treatment-resistant tics. Taper off during the course of weeks to months to avoid the risk of withdrawal dyskinesia.	Probably more effective than placebo
Pimozide	Initiate at 0.05 mg/kg nightly; increase every 3 days Usual range: 0.05–0.2 mg/kg/day (2–4 mg/day) Maximum dose: 10 mg/day	Drowsiness, movement disorders, QTc prolongation	FDA approved for TS-related tics. Reserved for significant treatment-resistant tics. Monitor for QTc prolongation before and during pimozide treatment. Taper off during the course of weeks to months to avoid the risk of withdrawal dyskinesia.	Possibly more effective than placebo
Aripiprazole	Initiate at 2 mg/day; increase as needed to the maximum dose Usual dose: 5 mg (<50 kg) 10 mg (≥50 kg) Maximum dose: 10 mg/day if <50 kg or 20 mg/day if ≥50 kg	Sedation, fatigue, weight gain, movement disorders	FDA approved for TS-related tics. Reserved for when other agents have failed or are contraindicated. May have less risk of movement disorders than other antipsychotics listed. May have more risk of weight gain compared with haloperidol or pimozide. Taper off during the course of weeks to months to avoid the risk of withdrawal dyskinesia.	Probably more effective than placebo
Risperidone	Initiate at 0.5 mg nightly; increase as needed to 3 mg/day Usual range: 0.5–3 mg/day divided twice daily Maximum dose: 3 mg/day	Sedation, fatigue, dizziness, weight gain, movement disorders	Reserved for treatment not responding to other agents. May have more risk of weight gain compared with haloperidol or pimozide. Taper off during the course of weeks to months to avoid the risk of withdrawal dyskinesia.	Probably more effective than placebo

ADHD, attention-deficit/hyperactivity disorder; TS, Tourette syndrome

* All antipsychotics carry increased risks of movement disorders, weight gain, adverse metabolic effects, increased prolactin levels, and neuroleptic malignant syndrome, but tendencies vary by agent and dose.

Figure 1: Common oral medications used in Tourette Syndrome



References

Seideman, M. F., & Seideman, T. A. (2020). A review of the current treatment of Tourette syndrome. *The journal of pediatric pharmacology and therapeutics*, 25(5), 401-412. <https://doi.org/10.5863/1551-6776-25.5.401>