

# Topiramate in the Adjunctive Treatment of Tourette Syndrome: A Case Report

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## ABSTRACT:

Topiramate in the adjunctive treatment of tourette syndrome: a case report

Tourette Syndrome (TS) is an inherited neuropsychiatric disorder with onset in childhood, characterized by multiple motor tics and at least one vocal tic. In many of the cases, Attention Deficit Hyperactivity Disorder (ADHD) is a frequent comorbid disorder. Many treatment options have been suggested for TS and ADHD comorbidity. In this article, we present a case diagnosed with TS and ADHD whose tics were refractory to many other suggested treatment options for Tic Disorders (TD) and worsened during the use of recommended first-line treatment agents for ADHD, that were significantly reduced by using topiramate. New therapeutic options that would be easily used and with less side effects are needed in the treatment of TD. Topiramate treatment seems like an appropriate option raising hope for the future to be used as monotherapy or in adjuvant treatment for TD. Larger trials with longer follow up are required in this field.

**Keywords:** Tourette syndrome, tic disorder, attention deficit hyperactivity disorder, topiramate

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## INTRODUCTION

Tourette syndrome (TS) is an inherited neuropsychiatric disorder with onset in childhood, characterized by multiple motor tics and at least one vocal tic<sup>1</sup>. In many cases, Attention Deficit Hyperactivity Disorder (ADHD), Obsessive Compulsive Disorder (OCD), Learning Disabilities and poor impulse control accompany the syndrome<sup>1-3</sup>. Taking severity of symptoms into consideration, treatment with alpha-2 agonists, antipsychotics and other medications can be planned. Topiramate is a broad-spectrum antiepileptic agent that is used in treating many

types of seizures. It is also reported that topiramate is efficient in treating headache, mood, behavioral disorders, pain, and tremor<sup>4</sup>. This article presents a case diagnosed with TS and ADHD according to DSM-IV-TR criteria whose symptoms significantly reduced by using topiramate.

## CASE

A thirteen year old boy admitted to our unit due to increase in motor and vocal tics. Initially, he had presented to an outpatient unit when he was 9 years old, due to attention deficiency and diagnosed with ADHD. He was started on short

acting form of methylphenydate (MPH) but as he reported feeling slowness, medication was switched to long acting form (MPH-OROS), resulting in weight gain. As his attention did not improve, atomoxetine (ATX) was added to MPH-OROS. His first motor tics started while he was using MPH-OROS 2 years ago, through the end of first year vocal tics added to clinical picture. He had no vocal tic free period that lasted more than 3 months. He had fine motor -mental development and no history of epileptic seizures, trauma or other medical conditions. Family history was also unremarkable. His neurological examination was normal. At the time of his admission to unit, he was on MPH-ATX combination. Since MPH is commonly addressed to exacerbate tic symptoms, it was stopped and he continued ATX monotherapy. However, symptoms increased 3 weeks after and as the case and family reported better functioning while he had been on MPH, he was switched back to MPH monotherapy. After a month, aripiprazole was combined with MPH for tic management. Shortly after aripiprazole was added, he began experiencing severe motor tics located especially in his trunk as well as an increase in vocal tics, so aripiprazole was discontinued. Second detailed neurological examination accompanied by brain magnetic resonance imaging (MRI) and electroencephalography (EEG) came back normal. With no improvement observed, MPH was discontinued. The case started on risperidone and dosage gradually increased to 1 mg/day in a month. No significant improvement was observed clinically after 8 weeks, so topiramate 25 mg/day was added. In three months time, risperidone was increased to 1.5 mg/day while topiramate to 50 mg/day. Significant reduction in tics was observed with this dual combination as initial Yale Global Tic Severity Scale (YGTSS) score of 38 points decreased to 4 at the third month of treatment. Although the case benefited from this combination, his attention problems continued so imipramine (IMI) 50 mg/day was added. He still receives 50 mg/day imipramine, 50 mg/day topiramate and 1.5 mg/day risperidone with no significant side effects and better overall functioning although

partial improvement observed regarding his attention problems.

## DISCUSSION

Pharmacotherapy is primary treatment approach in TS when symptoms start to negatively impact quality of life<sup>1</sup>. The case first admitted to our unit due to an exacerbation of tics while he was on MPH and ATX. Based on common knowledge that postulates exacerbation of tics with MPH treatment, MPH was stopped. However, severity of tics inclined during sole use of ATX. As tic symptoms caused severe impairments in functioning while he was on MPH, this points to an inconsistency with studies reporting MPH is well-tolerated in ADHD cases with TD<sup>2,5,6</sup>. As ADHD symptoms continued and both first line ADHD treatments were unable to be initiated, imipramine (IMI) was added for attention problems. Different outcomes were reported regarding the efficiency of treatment with IMI; for tics and comorbidities<sup>7</sup>. IMI had partial positive effect on ADHD symptoms in our case. It is of debate whether it also is efficient in reducing tic symptoms.

It is well-documented that low dose haloperidol and risperidone combination is effective and successful in treating TS; however, it yields to positive outcomes after long time<sup>8-11</sup>. Since the case reported severe symptoms and remarkable decline in functioning and to avoid weight gain, a common side effect of above-mentioned combination, different treatment that would also act faster was warranted. It is highly possible that the case had benefited from risperidone combined with topiramate; however marked decline in Yale Global Tic Severity Scale YGTSS scores and better clinical functioning as topiramate was added to risperidone after its sole use for 8 weeks might account for increase in treatment efficacy by augmentation. Apart from benefiting from augmentation, patient might have also benefited from gradual increase in risperidone dose.

With risperidone and topiramate combination, significant reduction in tics was observed. Rapid and significant reduction in severity of tic

symptoms and no significant side effects possibly due to moderate dose of medication might encourage other clinicians to use this agent more frequently in treatment processes. Our case also experienced significant reduction in tic symptoms, with topiramate that was used 50 mg/day, consistent with other studies recommending the agent be administered within 50–200 mg/day ranges. The exact action mechanism of topiramate is unknown, but the drug may enhance activity of inhibitory neurotransmitter gamma-aminobutyric acid (GABA), thereby increasing GABA-mediated neural inhibition which could partially explain its effectiveness in TD<sup>4</sup>. As topiramate's action

mechanism does not include dopamine receptor blockade, many side effects frequently encountered with use of atypical antipsychotics are spared and since medication is suggested to be administered in lower doses, many debilitating side effects would be avoided that could be counted as an advantage to prefer this medication as an alternative.

New therapeutic options that would be easily used and with less side effects are needed in the treatment of TD. In this context, topiramate treatment seems like an appropriate option raising hope for the future as an adjuvant agent. Larger trials with longer follow-up are required in this field.

## References:

1. Ayraler-Taner H, Guney E, Taner Y. Pharmacological treatment of tourette disorder. *Current Approaches in Psychiatry* 2013;5(2):246-59. (Turkish) [\[CrossRef\]](#)
2. Jankovic J, Kurlan R. Tourette syndrome: evolving concepts. *Mov Disord* 2011;26(6):1149-56. [\[CrossRef\]](#)
3. Taskiran S, Tufan AE, Semerci B. Aripiprazole can a viable choice for persistant suppression of symptoms in managing chronic tic disorders and Tourette's disorder through the life span: a case series. *Klinik Psikofarmakoloji Bulteni - Bulletin of Clinical Psychopharmacology* 2016;26(2):181-5. [\[CrossRef\]](#)
4. Jankovic J, Jimenez-Shahed J, Brown LW. A randomised, double blind, placebo controlled study of topiramate in the treatment of Tourette syndrome. *J Neurol Neurosurg Psychiatry* 2010;81(1):70-3. [\[CrossRef\]](#)
5. Fabiano GA, Pelham WE Jr, Coles EK, Gnagy EM, Chronis-Tuscano A, O'Connor BC. A meta-analysis of behavioral treatments for attention deficit/hyperactivity disorder. *Clin Psychol Rev* 2009;29(2):129-40. [\[CrossRef\]](#)
6. Scahill L, Chappell PB, Kim YS, Schultz RT, Katsovich L, Shepherd E, et al. A placebo controlled study of guanfacine in the treatment of children with tic disorders and attention deficit hyperactivity disorder. *Am J Psychiatry* 2001;158(7):1067- 74. [\[CrossRef\]](#)
7. Parraga HC, Harris KM, Parraga KL, Balen GM, Cruz C. An overview of the treatment of Tourette's disorder and tics. *J Child Adolesc Psychopharmacol* 2010;20(4):249-62. [\[CrossRef\]](#)
8. Bruun RD, Budman CL. Risperidone as a treatment for Tourette's syndrome. *J Clin Psychiatry* 1996; 57(1):29-31.
9. Gilbert D. Treatment of children and adolescents with tics and tourette syndrome. *J Child Neurol* 2006;21(8):690-700. [\[CrossRef\]](#)
10. Lombroso PJ, Scahill L, King RA, Lynch KA, Chappell PB, Peterson BS, et al. Risperidone treatment of children and adolescents with chronic tic disorders: a preliminary report. *J Am Acad Child Adolesc Psychiatry* 1995;34(9): 1147-52. [\[CrossRef\]](#)
11. Bestha DP, Jeevarakshagan S, Madaan V. Management of tics and Tourette's disorder: an update. *Expert Opin Pharmacother*. 2010;11(11):1813-22. [\[CrossRef\]](#)