

Case report / Olgu sunumu**Improvement of stuttering with use of methylphenidate in a child who was diagnosed with concomitant stuttering and ADHD**Leyla BOZATLI,¹ Kıvanç Kudret BERBEROĞLU,¹ Cansın CEYLAN,¹ Işık GÖRKER¹**ABSTRACT**

Stuttering is a psychological, neurological and neurophysiological rhythmic disorder in an understandable speech that is characterized by hesitation in speech flow, standstill with repeating a word or a sound, extension of a sound. Etiology of stuttering is not exactly known. In this case presentation, it is aimed to discuss the disappearance of stuttering in an 11 year old child who was diagnosed with stuttering and ADHD after treating with methylphenidate extended release. (*Anatolian Journal of Psychiatry* 2016; 17(Suppl.3):71-73)

Keywords: stuttering, stuttering treatment, methylphenidate, ADHD

DEHB ile birlikte kekemeliği olan bir çocukta metilfenidatla kekemeliğin düzelmesi**ÖZ**

Kekemelik, konuşma akışında tutukluk, bir sözcük ya da sesi tekrarlayarak duraklama, sesi uzatma, anlamlı bir konuşmada psikolojik, nörolojik ve fizyolojik bir ritim bozukluğu olarak tanımlanmaktadır. Kekemeliğin etyolojisi kesin olarak bilinmemektedir. Bu olgu sunumunda 11 yaşındaki vakamıza Kekemelik ve DEHB tanılarının konması üzerine başlanan uzun etkili metilfenidat sonrasında ortadan kalkan kekemeliğin tartışılması amaçlanmıştır. (*Anadolu Psikiyatri Derg* 2016; 17(Ek.3):71-73)

Anahtar sözcükler: Kekemelik, kekemelik tedavisi, metilfenidat, DEHB

INTRODUCTION

Stuttering is a rhythmic disorder in an understandable speech that is characterized by hesitation in speech flow, standstill with repeating a word or a sound, extension of a sound. It occurs commonly between ages of 2-7 years old.¹ Etiology of stuttering is not exactly known. In the etiology; genetical, neurophysiological and psychological factors which lead liability to disturbing the flow of speech are considered.²

A transient instability in basal ganglia can be seen due to dysfunction of realizing of dopamine from substantia nigra to nigrostriatal pathway during emotional states that occur in stressful events. In this case, there can be stuttering and

other involuntary movement disorders due to disinhibition. The all states that trigger stuttering reinforce and increase stuttering; this condition is called as feed-forward state.^{3,4}

There have been several studies that demonstrated hyperdopaminergic states caused stuttering. However, the roles of D1-D2 receptors in the development of stuttering are still unclear. Beside beneficial effects of methylphenidate in stuttering, in some cases it worsens the stuttering. It has been demonstrated that methylphenidate stimulated D1 receptors and reduced the D2 receptors in prefrontal cortex by indirect stimulation.⁴

In this case presentation, it is aimed to discuss

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the disappearance of stuttering in a child who was diagnosed with stuttering and ADHD after treating with methylphenidate extended release.

CASE

An 11 year old boy admitted to outpatient clinic with complaint of hesitation of speech. He had tonsillectomy and ear tube surgeries when he was 3 years old, the ear tube was extracted when he was 4 years old and after this second surgical intervention, it was reported that hesitation in speech initiated. The family reported that the hesitation of speech reduced sometimes however it never disappeared and when he started to the primary school, the hesitation of speech worsened. In history, it was reported that patient was diagnosed with ADHD at the second and third years of primary school, he was treated with methylphenidate and imipramine for one year and he was treated with methylphenidate extended release after the first year of treatment. The family reported that patient benefited partially from treatment and stopped treatment. It was considered that there have been hesitations in speech during the clinical examination and it was noted this hesitation commonly appeared at initiating of speech and it was also noted that frequency of hesitations were at the beginnings of every 2-3 words. After taking information from family and teacher and clinical examination, case was diagnosed as ADHD according to DSM 5. At the second assessment, patient was started on methylphenidate treatment and he was referred to speech therapist. When patient came to outpatient control, it was considered that the hesitations in speech disappeared. The family reported that hesitations in speech disappeared after 2-3 week of methylphenidate extended release treatment and they did not admit to speech therapist.

DISCUSSION

There is not a specific drug treatment for stuttering according to literature data. Because there are movement symptoms concomitant with stuttering, there are similarities between tic disorders and stuttering, and there is worsening of stuttering during stressful events, the dopamine type 2 (D2) receptor antagonists were tried in the treatment of stuttering. In this aspect, haloperidol and risperidone were reported to be effective in the treatment of stuttering in the case of accompanying movement disorders. While avoidant behaviors and anxiety are intensive, patients are reported to be benefited from serotonin re-

uptake inhibitors (SSRIs).²

In our case, it was noted that stuttering ameliorated after starting on methylphenidate extended release for treatment of ADHD. Regarding this case, it was found that there have been studies that investigated the role of D-amphetamine, non-selective beta blocker oxprenolol, methylphenidate and methylphenidate extended release in the treatment of stuttering and there has been also placebo controlled studies that mentioned this issue in literature.

Ginn and Hohman were the first authors who were aware of the beneficial effects of amphetamine in stuttering; they also reported 4 cases with stuttering who were treated with amphetamine for behavior disorder and in 2 cases stuttering were improved after treatment.⁵ In a double blind placebo controlled study, there was a significant improvement in D-amphetamine group compared with placebo group in terms of stuttering; however there was not any improvement in other speech disorders.^{6,7} In another study that compared methylphenidate and placebo in patients with stuttering, the patients were assessed in terms of reading and speech; there have been statistically significant decrease in hesitation in methylphenidate group compared with placebo group⁴

Although D-amphetamine demonstrated significant effects in the treatment of stuttering, they were not used in clinical practice due to their side effects. Methylphenidate which is an analogous of D-amphetamine is known to have no side effects like D-amphetamine, further randomized controlled studies are needed for providing the use of methylphenidate in the treatment of stuttering.⁷

There have been another agents that were investigated in the treatment of stuttering. Olanzapine was reported to have superiority to placebo in terms of ameliorating the stuttering; however only a few study confirmed this effect due to possible intolerable side effects of olanzapine⁸ Pimozide has been reported to have a significant role in providing the flow of speech. However, when considering the dopamine antagonists in the treatment of stuttering, potential side effects should be mentioned.⁹ In a randomized study, risperidone was reported to be effective in the treatment of developmental stuttering and also reported to be tolerable.¹⁰

SSRIs such as citalopram, escitalopram, tricyclic antidepressants such as clomipramine and benzodiazepines such as alprazolam were in-

vestigated in the treatment of stuttering and beneficial effects were reported.^{11,12} In our literature research, we considered that the agents that were investigated in the treatment of stuttering are limited to studies which were not confirmed or case reports. Regarding the amelioration of stuttering with methylphenidate in our case, it is emphasized that further studies are needed to clarify the place of methylphenidate extended release in the treatment of stuttering.

Authors' contributions: L.B.: Konuyu bulma, planlama, literatür, makaleyi yazma; K.K.B.: Konuyu bulma, literatür; C.C.: Literatür; I.G.: Literatür.

REFERENCES

1. Avcı A, Uğuz Ş, Toros F. Çocuklarda kekemelik: Karşılaştırmalı bir izleme çalışması. *Klinik Psikiyatri* 2002; 5:16-21.
2. Türkbay T. Konuşma ve dile özgü gelişimsel bozukluklar. F Çuhadaroğlu Çetin (Ed.), *Çocuk ve Ergen Psikiyatrisi Temel Kitabı*, Ankara: Hekimler Yayın Birliği, 2008, s.212-213.
3. Bijleveld HA. Some reflexions on subcortical implications in stuttering. *Second European Symposium on Fluency Disorders*; 22-24 April 2010; Antwerp.
4. Henk Rabaeyns, Devroey D, Bijleveld HA. The influence of methylphenidate on the severity of stuttering: a randomized controlled trial. *Vrije Universiteit Brussel* 2013-2014.
5. Ginn SA, Hohman LB. The use of dextro-amphetamine in severe behavior problems of children. *South Med J* 1953; 46:1124-1127.
6. Fish CH, Bowling E. Effect of amphetamines on speech defects in the mentally retarded. *Calif Med* 1962; 96:109-111.
7. Devroey D, Beerens G, Van de Vijver E. Methylphenidate as a treatment for stuttering: a case report. *Eur Rev Med Pharmacol Sci* 2012; 16(4 Suppl):66-69.
8. Maguire GA, Riley GD, Franklin DL, Maguire ME, Nguyen CT, Brojeni PH. Olanzapine in the treatment of developmental stuttering: a double-blind, placebo-controlled trial. *Ann Clin Psychiatry* 2004; 16:63-67.
9. Stager SV, Calis K, Grothe D, Bloch M, Berensen NM, Smith PJ, Braun A. Treatment with medications affecting dopaminergic and serotonergic mechanisms: effects on fluency and anxiety in persons who stutter. *J Fluency Disord* 2005; 30:319-335.
10. Maguire GA, Riley GD, Franklin DL, Gottschalk LA. Risperidone for the treatment of stuttering. *J Clin Psychopharmacol* 2000; 20:479-482.
11. Brady JP, Price TR, McAllister TW, Dietrich K. A trial of verapamil in the treatment of stuttering in adults. *Biol Psychiatry* 1989; 25(5):630-633.
12. Brady JP, Ali Z. Alprazolam, citalopram, and clomipramine for stuttering. *J Clin Psychopharmacol* 2000; 20(2):287.