

Brief Communication

Effectiveness and safety of methylphenidate in adult attention deficit hyperactivity disorder in patients with epilepsy: An open treatment trial

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Abstract

Objective. The purpose of this study was to evaluate the effectiveness and safety of methylphenidate treatment in epilepsy patients with comorbid adult attention deficit hyperactivity disorder (ADHD).

Methods. Six of 156 consecutive patients attending a tertiary epilepsy clinic for diagnostic evaluation of new seizures, 3 patients with epilepsy and 3 patients with psychogenic non-epileptic seizures, were diagnosed with comorbid adult ADHD. These 6 patients entered an open trial of methylphenidate 10 mg twice daily. Clinical improvement was assessed at 6 weeks of follow-up.

Results. Both groups showed clinical improvement of ADHD symptoms during treatment. None of the patients with comorbid epilepsy experienced adverse effects on seizure control or antiepileptic drug use.

Conclusion. In this open trial methylphenidate was safely used in patients with epilepsy and adult ADHD. It was effective against adult ADHD, and there were no adverse effects on seizure severity and frequency. A randomized study is needed to further establish effectiveness and safety.

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1. Introduction

In children with epilepsy, attention deficit hyperactivity disorder (ADHD) is a rather frequent comorbid mental disorder [1]. ADHD does not always subside in adulthood: the prevalence has been found to be 1–5% in the general adult population [2]. In such patients, treatment with methylphenidate has been found to improve well-being signifi-

cantly [3,4]. Stimulants are widely used in ADHD and have been shown to reduce ADHD symptoms in many children [5]. Treatment of ADHD with methylphenidate in children with epilepsy has been subject to debate as it is commonly believed to lower seizure threshold [6]. However, in several studies, treatment with methylphenidate has been proven effective and safe in children with ADHD and electroencephalographic abnormalities [7] or epilepsy [8]. The latter children had well-controlled epilepsy, and so, caution is still needed in patients with active seizures [9]. Adult patients with ADHD and epilepsy might experience similar benefits; in fact, such a case has been described—a patient with treatment-refractory epilepsy, obsessive-compulsive disorder, and adult ADHD [10]. In an open study,

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eight adult patients with epilepsy on multiple antiepileptic drugs showed cognitive improvement when methylphenidate was added to their antiepileptic drugs. They received relief from sedation and experienced improved quality of life, without significant alteration of seizure control. On average, serum antiepileptic drug concentrations changed <10% from baseline to the end of the study. No serious adverse events were observed [11]. As the use of methylphenidate did not make seizures worse in adults with epilepsy in the aforementioned study, two questions can be asked: Is the prevalence of adult ADHD higher in patients with epilepsy than in the general population, as is the case in children? And can adult ADHD be treated effectively and safely with methylphenidate in patients with treatment-refractory epilepsy? To answer these questions, a two-step screening method was used to recruit adult ADHD patients in a neurological clinic with and without epilepsy for an open treatment trial.

2. Method

Over a 3-year period, 156 patients with new cases of seizures admitted to a tertiary care epilepsy clinic for diagnostic evaluation were referred for psychiatric evaluation after Composite International Diagnostic Interview (CIDI) screening for mental disorders [12]. Of these 156 patients, 126 were diagnosed with epilepsy and 30 were diagnosed with psychogenic non-epileptic seizures (PNES). The diagnosis of PNES was made after 36 hours of observation with EEG/video registration and analysis by an experienced clinical neurophysiologist.

The patients were subjected to a standardized psychiatric interview to establish DSM-IV diagnostic classification [13], and treatment was administered accordingly. Data concerning DSM-IV diagnosis, ILAE seizure classification [14], and cerebral pathology were collected. Six patients were diagnosed with adult ADHD: three patients with comorbid epilepsy, and three patients with PNES. None of these patients had previously been diagnosed with or treated for ADHD. After being diagnosed with adult ADHD by this two-step screening method, the patients were offered treatment with methylphenidate. Before the start of treatment, cardiac status and blood pressure were evaluated. Treatment consisted of the standard dosage of methylphenidate, 10 mg twice daily at 8:00 AM and 12:00 PM [4]. During the first days of treatment, blood pressure, pulse, and possible adverse symptoms were checked. After 6 weeks, a follow-up psychiatric interview was conducted to evaluate the outcome.

3. Results

3.1. Prevalence

Of the 156 patients admitted to the diagnostic and treatment ward or visiting the outpatient section of the long-term residence clinic who scored positively for a mental disorder after CIDI screening, 126 were diagnosed with and treated for epilepsy. The remaining 30 patients were diagnosed with PNES. Of the 156 patients, 6 patients were diagnosed with adult ADHD using a standardized psychiatric interview: 3 with epilepsy (2.4%), and 3 with PNES (10%). Their mean age was 25 (range: 19–30). The patients with epilepsy were somewhat older than those with PNES. The results from this study are summarized in Table 1.

Table 1

Diagnosis and treatment variables in patients with adult ADHD and epilepsy and patients with adult ADHD and psychogenic non-epileptic seizures (PNES) treated with methylphenidate

Variable	Epilepsy (<i>N</i> = 3)	PNES (<i>N</i> = 3)
Age		
Mean	27	24
Range	21–30	18–28
Sex		
Male	2	1
Female	1	2
Cerebral pathology		
Infection	1	0
Trauma	1	0
None	1	3
Adult ADHD		
Combined type	3	2
Hyperactive type	0	1
Psychiatric comorbidity		
Obsessive–compulsive disorder	2	0
Cannabis abuse	1	0
Posttraumatic stress disorder	0	1
None	0	2
Methylphenidate 10 mg twice daily	3	3
Adverse effects		
None	2	2
Nausea	1	0
Tachycardia	0	1
Methylphenidate effective	3	3
Discontinuation of methylphenidate because of adverse effects	1	1

3.2. Comorbidity

All three patients with epilepsy and adult ADHD had another comorbid condition: two had obsessive–convulsive disorder, and one, cannabis abuse. Cerebral pathology in two of the three patients with epilepsy and adult ADHD showed one case of cerebral toxoplasmosis and one case of trauma. None of the adult ADHD patients with PNES had cerebral pathology. Among the three patients with epilepsy, one had tonic–clonic and two had partial complex seizures. In all three patients, seizures were resistant to treatment, even with two or more antiepileptic drugs.

3.3. Open trial

Diagnosis and treatment variables in both groups are listed in Table 1. All patients gave their informed consent to the treatment trial with methylphenidate. Other medication that had failed to ameliorate symptoms, such as haloperidol, clomipramine, clonidine, oxazepam, and diazepam, was discontinued during the open trial. The subjects took only methylphenidate twice daily and (in case of patients with epilepsy) antiepileptic drugs. All six showed improvement: they no longer exhibited the symptoms of ADHD, as established in a clinical interview with an experienced psychiatrist at 6 weeks of follow-up, and symptoms of obsessive–compulsive disorder, a comorbid disorder, subsided as well. However, in two cases, one in each group,

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