Psychiatric Quarterly (2019) 90:41–46
https://doi.org/10.1007/s11126-018-9602-7

ORIGINAL PAPER

Treatment of Adult ADHD without Stimulants: Effectiveness in A Dually Diagnosed Correctional Population

Leo Bastiaens [1] · Olivia Scott [1] · James Galus [1]

Published online: 26 September 2018

Abstract
Adult ADHD has received increased attention in the past two decades. There is a complex relationship between ADHD and substance use disorders, with ADHD being a risk factor for and a moderator in the treatment of addiction. ADHD is also a risk factor for the development of antisocial personality disorder. As a result, ADHD is prevalent in a correctional dually diagnosed population. This retrospective chart review reports on the effectiveness of the treatment for ADHD in a population with substance use disorders, residing in a correctional community center for treatment and reintegration purposes. Only patients with a primary diagnosis of ADHD were included and only nonstimulants were used. After an average of four visits, or approximately four months, patient showed a moderate response with a pretreatment to posttreatment effect size of 1.4. Sixty-four percent of patients responded and 35% remitted, according to the Clinical Global Index Severity Scale as the primary outcome measure. While stimulants are considered the first-line treatment for ADHD, they clearly present challenges in certain populations, especially in patients with significant antisocial and addiction histories. It does appear that non-stimulants are effective in this population. It is speculated that the response and remission rate could be improved by adding ADHD specific psychosocial interventions.

Keywords Adult ADHD · Addiction · Non-stimulants · Effectiveness

Introduction

In the early 2000s, the U.S. National Comorbidity Survey Replication reported an attention deficit hyperactivity disorder (ADHD) prevalence of 4.4% in adults [1]. Since that time, an increased interest in the recognition and treatment of adult ADHD has emerged. Based upon this research, the diagnostic criteria for adult ADHD were changed in DSM-5 and pharmacological treatment studies were conducted. Although there has been some debate about adult onset ADHD, the

✉ Leo Bastiaens
lbastiaens@RenewalInc.com

[1] Renewal Treatment, Inc., 700 Fifth Ave, Pittsburgh, PA 15219, USA

DSM-5 maintains that symptomatology needs to be identified before the age of 12. In adulthood, however, fewer criteria are required to reach a diagnostic threshold [2]. Pharmacological studies with stimulants and non-stimulants led to several medications being FDA approved for this condition [3–5].

While the diagnosis of ADHD in children and adolescents routinely involves obtaining information from three parties: the patient, the parents, and the teachers, the diagnosis of adult ADHD is often made through a psychiatric evaluation with the patient as the sole informant. This presents many challenges: the recall of childhood symptomatology and impairment, the differentiation of symptoms related to comorbid conditions, the assessment of functional impairment in several areas, and the potential maximization of reported symptoms to obtain controlled substances [6, 7]. The diversion of stimulant medications in older adolescents and young adults is indeed well-documented [8]. All of these considerations: changed criteria, FDA approval of medications, assessment challenges, and diversion, are heightened in patients with substance use disorders.

The prevalence of ADHD in addiction patients is much higher than the prevalence in the general population [9]. ADHD is indeed a significant risk factor for the emergence of substance abuse in adolescence and young adulthood [10]. At the same time, ADHD is a poor prognostic indicator in the recovery process of addiction [11]. ADHD has also been identified as a component in the developmental trajectory toward conduct disorder, delinquency, and antisocial personality disorder [12]. It is thus not surprising that in a correctional addiction patient population, the presence of ADHD is frequent and impairing. Symptoms related to inattention, restlessness, and emotional and impulse dysregulation interfere with the psychosocial rehabilitation efforts and with the reintegration into the community and occupational arena. The importance of identifying and treating ADHD in adults as part of their drug and alcohol recovery program is clear.

While most guidelines recommend stimulants as first-line pharmacological treatment for ADHD, because of their greater effect size during short-term trials compared to non-stimulants, this recommendation is clearly problematic in a population struggling with addiction and antisocial behavior [13–16]. In this regard, non-stimulant medications are preferable [17]. The best studied non-stimulant medication for adult ADHD is atomoxetine [18]. Alpha-2 agonists, such as guanfacine and clonidine, are approved for ADHD in children and adolescents, but have not been well studied in adults [19]. Tricyclic antidepressants, such as nortriptyline and desipramine, even though not FDA approved for ADHD, have been found to be effective [17].

This exploratory study presents, through a retrospective chart review, the treatment results of adult ADHD in an addiction recovery and reintegration program of a correctional community center (CCC). Because of the possibility of diversion in this CCC, certain medications are not used: stimulants, benzodiazepines, gabapentin, quetiapine, and buproprion. As such, the available treatments for ADHD were atomoxetine, alpha-2 agonists (guanfacine and clonidine), and tricyclic antidepressants.

It was hypothesized that the treatment for ADHD with these medications would show a moderate pretreatment to posttreatment effect size. It was further hypothesized that stimulant naïve patients would respond better than patients previously exposed to stimulant treatment.

Methods

Inmates of county jails and state prisons were referred to the CCC for treatment of their substance use and psychiatric disorders and for reintegration in the community through a work

release program. A psychiatric evaluation, including a review of the department of corrections mental health records, was part of this process. Diagnoses were made according to the DSM-5.

The current study focused on patients with a primary diagnosis of ADHD, i.e. ADHD had not been identified and/or treated in the correctional institution prior to the transfer to the CCC, while other comorbid conditions had been stabilized. Patients who were diagnosed with ADHD but required stabilization of comorbid psychiatric conditions first were not included. During the evaluation, the recollection of ADHD symptoms in childhood, the report of ADHD symptoms in adulthood, and the report of impairment in multiple areas of functioning needed to be accompanied by an individual authentic narrative, demonstrating how symptoms and impairment manifested themselves in the life of the patient. No formal rating scales were utilized, in part for concern of maximization of symptomatology in this patient population.

Pharmacological treatment of ADHD was started with atomoxetine, guanfacine or nortriptyline, based on factors such as past response and tolerability, insurance formulary (managed medicaid plans), and medical/psychiatric co-morbidity. For example, patients with uncontrolled hypertension or co-morbid bipolar disorder were preferentially started on guanfacine, an anti-hypertensive with minimal potential for mood destabilization.

Patients were seen in follow up appointments every month on average, until their discharge from the program. A minimum of two post-evaluation follow up visits were required for inclusion in the study. Residents of the program could indeed be transferred to other settings unexpectedly because of legal/parole considerations. Different patients had different lengths of follow up and different numbers of pharmacological trials. A Clinical Global Impression Severity (CGI) rating was completed at every visit [20]. No psychotherapy specifically targeting ADHD was provided. Medication adherence was monitored on the treatment and work release units by staff through blister pack pill count. Patients who dropped out of the treatment were not followed up and, as such, the study focuses on observed cases only.

The standardized mean difference between the pretreatment to posttreatment CGI severity scale was the primary outcome measure (Cohen's d, effect size). Response was defined as an end CGI severity score of equal or less than 3, and remission was defined as an end CGI severity score of 1 or 2.

Results

Between January 2014 and December 2017, one hundred and eight patients (average age: 32.4 ± 7.9) with a primary diagnosis of ADHD were identified and treated. Ninety-seven (90%) patients were white and 11 (10%) were black. Eighty-four (78%) subjects were male. Thirty-seven (34%) of these patients had received treatment for ADHD in the past, including 32 with stimulant medications.

All patients suffered from one or more substance use disorders and the following psychiatric comorbidities: depressive disorders ($n = 23$), anxiety disorders (n = 23), adjustment disorders, most commonly related to past trauma ($n = 11$), PTSD ($n = 5$), bipolar disorder (n = 5), intermittent explosive disorder ($n = 3$).

The severity of illness was characterized by the following: 47% had been hospitalized for psychiatric reasons in the past, 40% had a documented history of aggressive behavior, and 21% had attempted suicide in the past.

During the course of the ADHD treatment, many patients were taking psychotropic medications for comorbid conditions including low dose doxepin for sleep ($n = 38$), atypical

antidepressants ($n = 33$), naltrexone ($n = 19$), SSRIs ($n = 15$), buspirone ($n = 12$), SNRIs ($n = 6$), atypical antipsychotics ($n = 5$), and traditional mood stabilizers ($n = 2$).

Atomoxetine was used as the first medication in 77 patients, guanfacine in 25, and nortriptyline in 6 patients. Due to the lack of effectiveness or due to intolerability, the medication was switched to guanfacine in 15, atomoxetine in 9 and nortriptyline in 2 patients. Five patients required a third medication trial, one with atomoxetine, one with guanfacine, and three with nortriptyline.

The average pretreatment CGI severity scale score was 4.2 ± 0.7. After an average of 4 ± 1.3 visits, the CGI severity scale decline to 2.9 ± 1.1, indicating an improvement from moderate symptomatology to mild symptomatology on average. The pretreatment to posttreatment effect size (Cohen's d) was 1.4. At the last recorded visit, 64% had responded with a CGI score of 3 or less, and 35% remitted with a score of 2 or less.

Contrary to the hypothesis, stimulant naïve patients did less well than patients who had received stimulant treatment in the past. Fifty-nine percent of stimulant naïve patients responded compared to 75% of prior stimulant treated patients. The numbers for remission were 32 and 44% respectively.

Discussion

This naturalistic exploratory study has clear limitations: uncontrolled treatment without comparison group, multiple co-morbid diagnoses, diagnoses made by clinical interview, variable follow up durations, and global outcome assessments. However, it provides a glimpse in the real world treatment of a very difficult patient population, in which ADHD is commonly present.

Overall, the study shows favorable results with an effect size of 1.4 and a response and remission rate of 64 and 35%. Because this was an uncontrolled treatment environment, it is unclear how much improvement can be attributed to the pharmacological intervention versus confounding variables, such as time, placebo effect, changes in comorbid conditions, changes in occupational status impacting executive functioning, duration of treatment, or adherence monitoring.

There are very few effectiveness studies in adult ADHD, the largest one being the Quality of Life, Effectiveness, Safety, and Tolerability (QU.E.S.T.) evaluation of mixed amphetamine salts extended release in adults with ADHD [21]. In this large study, the effect size after 8 months of treatment with mixed amphetamine salts was 2.1, with a 75% response rate as measured by the CGI-Improvement scale. It is very hard to compare the current retrospective chart review with the QU.E.S.T. study: the latter had a prospective design with a large community outpatient population without significant psychiatric or substance use disorder comorbidity, while the current study reports on a retrospective review of the treatment in a small patient population with significant comorbidity within the context of compulsory supervision through the parole system. However, one observation is noteworthy: the effect size in the QU.E.S.T. trial was 2.1 while in the current study, it was 1.4. A proportional difference in effect sizes is seen in randomized, placebo-controlled short term studies: 0.7 for long acting stimulants versus 0.4 for non-stimulants [14]. While treatment naïve patients responded better in the QU.E.S.T. study, patients previously treated with stimulants did better in the correctional population. It is unclear what explains this difference. The fact that past stimulant treated patients did better in the current study was contrary to the stated hypothesis. The hypothesis was formulated on theoretical and clinical grounds: patients with a heavy addiction history who were exposed to fast acting compounds in the past, were assumed not

to tolerate the delayed onset of action of non-stimulants. However, the expectation of improvement based upon past experience, together with the knowledge that stimulants were not available, may have played a role.

The exclusion of stimulants in the CCC is based on concerns of diversion and abuse in an environment where drugs of abuse continue to be readily available. This is a trade off because, while very few long term trials are available, in randomized placebo controlled short term studies, non-stimulants are less effective. However, non-stimulants have advantages beyond the absence of an abuse potential: 24 h symptom reduction for many patients, flexibility in time of dosing, and potential improvement of comorbid anxiety and depressive symptoms. It is thus reassuring that there was a sizable response with non-stimulants in this difficult patient population. Rather than introducing stimulants in this treatment environment, it would be more prudent to try to enhance response and remission rates by adding ADHD specific psychosocial interventions [22]. In an ever faster moving society with the emphasis on "here, now, and easy", an investment in "skills, not pills" may be worthwhile.

Compliance with Ethical Standards

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Conflict of Interest The authors declare that they have no conflict of interest. No funding received.

Human Rights For this type of study formal consent is not required.

Informed Consent Informed consent was obtained from all individual participants in the study.

References

1. Kessler RC, Adler L, Barkley R, et al. The prevalence and correlates of adult ADHD in the United States: results from the National Comorbidity Survey Replication. Am J Psychiatry. 2006;163:716–23.
2. American Psychiatric Association. Diagnostic and statistical manual of mental disorders, 5th ed. Washington, DC. 2013.
3. Fredriksena M, Halmøy A, Faraone S, et al. Long-term efficacy and safety of treatment with stimulants and atomoxetine in adult ADHD: a review of controlled and naturalistic studies. Eur Neuropsychopharmacol. 2013;23:508–27.
4. Michelson D, Adler L, Spencer T, Reimherr FW, West SA, Allen AJ, et al. Atomoxetine in adults with ADHD: tworandomized, placebo-controlled studies. Biol Psychiatry. 2003;53:112–20.
5. Faraone S, Spencer T, Aleardi M, et al. Meta-analysis of the efficacy of methylphenidate for treating adult attention-deficit/hyperactivity disorder. J Clin Psychopharmacol. 2004;24:24–9.
6. Sibley M, Pelham W, Gnagy E, et al. When diagnosing ADHD in young adults emphasize informant reports, DSM items, and impairment. J Consult Clin Psychol. 2012;80:1052–61.
7. Newcorn J, Weiss M, Stein M. The complexity of ADHD: diagnosis and treatment of the adult patient with comorbidities. CNS Spectr. 2007;12:1–16.
8. Wilens T, Adler L, Adams J. Misuse and diversion of stimulants prescribed for ADHD: a systematic review of the literature. J Amer Acad Child Adolesc Psychiatry. 2008;47:21–31.
9. Van de Glind G, Konstenius M, Koeter M, et al. Variability in the prevalence of adult ADHD in treatment seeking substance use disorder patients: results from an international multi-center study exploring DSM-IV and DSM-5 criteria. Drug Alcohol Depend. 2014;134:158–66.

10. Molina B, Pelham W. Childhood predictors of adolescent substance use in a longitudinal study of children with ADHD. J Abnorm Psychol. 2003;112:497–507.
11. Wilens T. Impact of ADHD and its treatment on substance abuse in adults. J Clin Psychiatry. 2004;65(suppl):38–45.
12. Storebo O, Simionsen E. The association between ADHD and antisocial personality disorder (ASPD): a review. J Atten Disord. 2013;20:1–10.
13. Greenhill L, Pliszka S, Dulcan M. Practice parameter for the use of stimulant medications in the treatment of children, adolescents, and adults. J Amer Acad Child Adolesc Psychiatry. 2002;41:26S–49S.
14. Faraone S, Glatt S. A comparison of the efficacy of medications for adult attention deficit/hyperactivity disorder using meta-analysis of effect sizes. J Clin Psychiatry. 2010;71:754–63.
15. Kollins S. ADHD, substance use disorders, and psychostimulant treatment: current literature and treatment guidelines. J Atten Disord. 2008;12:115–25.
16. Kollins S. A qualitative review of issues arising in the use of psychostimulant medications in patients with ADHD and co-morbid substance use disorders. Curr Med Res Opin. 2008;24:1345–57.
17. Pliszka S. Non-stimulant treatment of attention-deficit/hyperactivity disorder. CNS Spectr. 2003;8:253–8.
18. Wilens T, Adler L, Weiss M, Michelson D, Ramsey JL, Moore RJ, et al. Atomoxetine treatment of adults with ADHD and comorbid alcohol use disorders. Drug Alcohol Depend. 2008;96:145–54.
19. Taylor F, Russo J. Comparing guanfacine and dextroamphetamine for the treatment of adult attention-deficit/hyperactivity disorder. J Clin Psychopharmacol. 2001;21:223–8.
20. Guy W, editor. ECDEU assessment manual for psychopharmacology. Rockville, MD: US Department of Heath, Education, and Welfare Public Health Service Alcohol, Drug Abuse, and Mental Health Administration; 1976.
21. Weiss M, Gibbins C, Goodman D, et al. Moderators and mediators of symptoms and quality of life outcomes in an open-label study of adults treated for attention-deficit/hyperactivity disorder. J Clin Psychiatry. 2010;71:381–90.
22. Ramsey J. CBT for adult ADHD: adaptations and hypothesized mechanisms of change. J Cogn Psychother. 2010;24:37–45.

Leo Bastiaens, MD is Clinical Associate Professor at the University of Pittsburgh School of Medicine. He earned his medical degree at the University of Leuven, Belgium and completed residencies at Mount Sinai Medical Center, N.Y., and Harvard University, Boston. He is board certified in psychiatry and child and adolescent psychiatry and is a member of the Academy of Cognitive Therapy.

Olivia Scott is a psychology student at Willamette University in Salem, OR. She did an internship at Renewal Treatment, Inc.

James Galus, MA is the mental health clinic supervisor at Renewal Treatment, Inc. He earned degrees in sociology and counseling psychology from the University of Pittsburgh and from Bowie State University.