Journal of Affective Disorders 217 (2017) 60–65

Contents lists available at ScienceDirect

Journal of Affective Disorders

journal homepage: www.elsevier.com/locate/jad

Research paper

Attention deficit hyperactivity disorder and substance abuse: An investigation in young Austrian males

Anita Riegler[a], Sabine Völkl-Kernstock[b], Otto Lesch[a], Henriette Walter[a], Katrin Skala[b,*]

[a] Medical University of Vienna, Dept. of Psychiatry and Psychotherapy, Austria
[b] Medical University of Vienna, Dept. of Child and Adolescent Psychiatry, Austria

ARTICLE INFO

Keywords:
ADHD
Addiction
Adolescence
Substance use

ABSTRACT

Background: Many studies have found an association between Substance Use Disorders (SUDs) and Attention Deficit Hyperactivity Disorder (ADHD) in children, adolescents and adults. We intended to determine whether substance abuse and SUDs are associated with former and current ADHD symptomatology in a non-clinical sample of 17 and 18 year old males.

Method: A representative sample of 3280 young men (6.8% of all males born in Austria in the respective year) was investigated during the examination for military service. We collected data on past (WURS) and current (ADHD symptom checklist) ADHD symptomatology, substance abuse, parental substance use and abuse and motives for substance use.

Results: Measured by WURS, 10.1% had scored positive for past ADHD symptoms. 2.7% of all subjects stated that they have been treated for ADHD and 1.5% reported that they had at one point received pharmacological treatment for the condition. Abuse of alcohol, nicotine and illicit substances was significantly ($p < .01$) more frequent in subjects with ADHD syndrome. Perceived parental alcohol abuse increased the risk for ADHD in the offspring. Motives for substance use differed greatly between groups.

Limitations: The sample consists of men only. Subjects had to be fit enough to be enlisted military service, generating a possible bias towards healthier subjects. The cross-sectional design does not allow conclusions about the temporal relationships between ADHD symptoms and substance abuse.

Conclusion: Identification of vulnerability factors for comorbid ADHD and SUD in adolescence should be intensified. Preventive strategies ought to be established.

1. Introduction

Attention Deficit-Hyperactivity Disorder (ADHD) is a chronic developmental psychiatric disorder with a prevalence of 3–12% in children. Symptoms seem to persist into adulthood in up to 50% of affected minors (Turkyilmaz et al., 2012; Faraone et al., 2003); consequently, an estimated 1–6% of all adults might suffer from symptoms of ADHD.

Children and adolescents with ADHD are at increased risk of developing substance use disorders (SUDs) and nicotine dependence compared with children without ADHD (Wilens, 2007; Molina et al., 2007; Charach et al., 2011; Vitulano et al., 2014; Skala and Walter, 2013). A meta-analytic review of the prospective association of childhood ADHD and substance use showed that children with ADHD were nearly 3 times more likely to report nicotine dependence in adolescence and adulthood, almost 2 times more likely to meet diagnostic criteria for alcohol abuse or dependence, approximately 1.5 times more likely to meet criteria for marijuana use disorder, twice as likely to develop cocaine abuse or dependence and more than 2.5 times more likely to develop an SUD overall than children without ADHD (Lee et al., 2011). A recent long-term follow-up study found substance and alcohol abuse to be six times more likely in cases with ADHD than in controls (Dalsgaard et al., 2014). Meeting the criteria of ADHD in adolescence has been shown to be associated with developing SUDs in a subject's 20 s and 30 s (Brook et al., 2010) and while the number of inattention and hyperactivity/impulsivity symptoms exhibited is positively correlated with the risk of substance use (Gudjonsson et al., 2012), there was also and overall association of ADHD with an earlier age at onset of substance use and a higher likelihood of use of a variety of substances (Horner et al., 1997; Arias et al., 2008; Wilens et al., 2011; Dunne et al., 2014).

The ADHD-drug abuse link is also evident from the reverse perspective as the prevalence of ADHD is much higher in substance-dependent populations compared with the general population (van de Glind et al., 2014) and up to 50% of adolescents and adults with

* Correspondence to: University of Vienna, Dept. of Child and Adolescent Psychiatry, Spitalgasse 23, 1090 Vienna, Austria.
E-mail address: katrin.skala@meduniwien.ac.a (K. Skala).

http://dx.doi.org/10.1016/j.jad.2017.03.072
Received 5 December 2016; Received in revised form 24 March 2017; Accepted 30 March 2017
Available online 04 April 2017
0165-0327/

substance abuse disorders have a lifetime diagnosis of ADHD (Wilens, 2004, 2007). Conduct disorder, depression, anxiety and low self-esteem have each been noted to again increase the risk of substance use in individuals with ADHD (Wilens et al., 2012; Glass et al., 2012; Yoshimasu et al., 2012; Warden et al., 2012; Sartor et al., 2007). Still, ADHD symptoms have repeatedly been shown to be associated with an increased risk of both substance use and the development of SUDs even after controlling for comorbid conditions (Arias, 2008).

2. Aims of the study

Most studies in this field have, however, investigated subjects who were treated for either ADHD or substance abuse. This investigation set out to examine whether a life time prevalence of ADHD is associated with substance use and abuse in a representative, non-clinical sample of 18 year old males. We also sought to determine whether reported parental substance use and abuse increase the probability of SUDs or ADHD in the offspring and if motives for substance use differed between subjects with ADHD syndrome and those not affected by the condition.

3. Methods

3.1. Overview, sample, procedures

In Austria military service is mandatory for all 18 year old males. Conscription of military servicemen is based on a preliminary psychological and medical examination of all males who turn 18 in the respectable year. This investigation includes blood and urine testing as well as a psychological examination in order to assess the subject´s fitness and capability to perform National Service. In order to obtain an unbiased and representative sample we chose 11 districts including urban and rural areas, agricultural and industrial regions, as well as lower and higher income areas.

3.2. Data collection

Data have been collected between January 2010 and December 2010 at two of a total of six recruitment centres for military service in Austria (one located in the province of Tyrol, one located in the province of Lower Austria). All young males born in 1992, who were residing in the selected districts and were liable to enlistment to the Military Service (n = 3340), were asked to participate in the study. 60 persons (22 of 1297 young men (1.70%) from the province of Tirol and 38 of 2043 subjects (1.86%) in the province of Lower Austria) refused participation. The total number of enrolled subjects was 3280. Data collection was conducted additionally to the standard procedure performed by the Military Service authorities which includes a physical and mental check-up. Every subject was investigated by the same rater who was very experienced with all scales applied.

3.3. Measures

3.3.1. ADHD

Life time prevalence of ADHD was examined using the Wender Utah Rating Scale (WURS-K) (Retz-Junginger et al., 2002; Ward et al., 1993), an instrument designed for the retrospective diagnosis of attention-deficit/hyperactivity disorder in adults. The 25-item Scale is retrospectively measuring the severity of childhood ADHD symptoms by using a 5-point Likert scale. All items are rated from 0 (not at all) to 4 (very much). The total maximum score is 100, the cut-off for the diagnosis of childhood ADHD is 36. Reliability is r = 0,85 and Cronbachs α as measure for internal consistency is α = 0,91 (Retz-Junginger et al., 2002).

Current symptoms of ADHD were investigated by means of the ADHD checklist for adults based on DSM IV. This checklist consists of 18 items. 9 items are referring to inattention, 6 items to hyperactivity and 3 items assess symptoms of impulsiveness. For testing positive for ADHD a person must present 6 or more symptoms of inattention and 6 or more symptoms of hyperactivity and impulsivity. The symptoms must have been present already in childhood (age 7–12) and persisted for at least six months prior to investigation to meet the criteria for adult ADHD.

3.3.2. Nicotine consumption

Smoking was assessed with the question: “Are you smoking?” (“Yes” or “No”) followed by the Heavy Smoking Index (HSI) which consists of two questions: “How many cigarettes do you smoke per day?” (“Non-smoker”, “10 or less”, “11–20”, “21–30”, and “31 or more”) and “When do you smoke your first cigarette in the morning?” (“Within 5 min”,“6–30 min”, “31–60 min”, and “after more than 60 min”). Both questions were scored between 0 and 3 and a HSI-sum score ranging between 0 and 6 was built. The HSI has been previously validated by plasma and saliva cotinine, as well as carbon monoxide levels (Heatherton et al., 1989; Kapusta et al., 2010).

3.3.3. Alcohol consumption

The CAGE questionnaire (“Cutting down”, “Annoyance by criticism”, “Guilty feeling” and “Eye-openers”) was used to rate alcohol related behaviour. The CAGE questionnaire has good sensitivity and specificity for alcohol abuse and dependence. A result of 2 or more positive answers is a strong indicator for problematic alcohol use (Ewing et al., 1984; Bradley et al., 2001). Both alcohol consumption measures were correlated with r = .41, pb0.001.

3.3.4. Use of illicit substances

To assess experiences with illicit drugs, the subjects were asked “Have you ever consumed one of the following drugs?” The response options for each substance (THC, Benzodiazepines, Cocaine, Opiates, Ecstasy, and other drugs) were: (0) never, (1) once, (2) several times (3) regularly. Based on these reports, a dummy variable “drug experience” was build, representing at least one drug experience during lifetime.

3.3.5. Parental alcohol/nicotine consumption

Participants were asked to report current and former alcohol and nicotine consumption (not drinking/smoking at all, drinking/smoking occasionally, drinking/smoking regularly) of each of their parents. They were also asked whether they thought or knew that their mothers had smoked during pregnancy. As it has been shown that even single item questions can be a valid possibility to identify parental alcohol problems (Crews and Sher, 1992), we decided to use a combination of two single item questions.

3.3.6. Parental alcohol problems/nicotine addiction

Parental alcohol problems were investigated by asking the participant, if during childhood he has ever thought that a parent had a drinking or smoking problem, or if he ever worried about a parents drinking or smoking. These questions have been shown to be valid in identifying identify parental alcohol or smoking problems (Crews et al., 1992). Both question discriminated between mother and father and had "yes" or "no" options.

3.3.7. Motives for substance use

Motives for substance use were also investigated. Options were: “for the taste”, “to overcome difficult situations”, “to overcome uncertainties, feel at ease”, “to deal with stress” “to relax, to calm down”, “to improve mood”, “because of social pressure”, “as a reward”, “when I am bored”. These questions derived from investigations showing that social motives are rather related to peer group consumption while coping motives tend to be related to alcohol related problems (Németh et al., 2011; Grant et al., 2007).