Adult Attention Deficit Hyperactivity Disorder in Substance Abuse Patients

Thesis

Submitted in Partial Fulfillment of Requirements of
Master Degree in Neuropsychiatry Medicine

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2014

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

﴿ اقْرَأْ باسْم رَبِّكَ الَّذِى خَلَقَ * خَلَقَ الإِنْسَانَ مِن عَلَقٍ * اقْرَأْ وَرَبُّكَ الأَكْرَمُ * الَّذِى عَلَّمَ بالْقَلَمِ * عَلَّمِ الإِنْسانَ مَالَمْ يَعْلَمِ ﴾

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Abb.		Meaning
ADDA	:	The Attention Deficit Disorder Association.
ADHD	:	Attention deficit/hyperactivity disorder.
ADHD RS-IV	:	ADHD Rating Scale-IV.
ADHD-CT	:	ADHD Combined Type
ADHD-HI	:	Hyperactive Impulsive Type
ADHD-IA	:	Inattentive Type.
AIDS	:	Acquired Immunodeficiency Syndrome.
APA	:	American Psychiatric Association.
APRS	:	Academic Performance Rating Scale.
ASI	:	Addiction Severity Index.
ASPD	:	Antisocial Personality Disorder.
ASRS-V1.1	:	Adult ADHD Self-Report Scale-Version 1.1.
ATS	:	Amphetamines.
AUD	:	Alcohol Use Disorder.
BD	:	Bipolar Disorder.
CAADID	:	Conners' Adult ADHD Diagnostic Interview for DSM-IV.
CAARS	:	Conners Adult ADHD Rating Scale.
CBCL	:	Child Behavior Checklist.
CBT	:	Cognitive Behavioral Therapy.
CD	:	Conduct Disorder.
CHADD	:	Children and Adults with Attention Deficit Disorder.

List of Abbreviations (Cont…)

Abb.		Meaning
CIDI-SAM	:	Composite International Diagnostic Interview-Substance Abuse Module.
CPRS-R	:	Conners Parent Rating Scale – Revised.
CTN	:	Clinical Trials Network.
CTRS-R	:	Conners Teacher Rating Scale – Revised.
DA	:	Dopamine.
DALYS	:	Disability-adjusted Life Years.
DAT1	:	Dopamine Transporter Gene 1.
DICA	:	Diagnostic Interview for Children and Adolescents.
DIS	:	Diagnostic Interview Schedule for DSM-IV.
DISC	:	Diagnostic Interview Schedule for Children.
DRD1	:	Dopamine Receptor 1.
DRD2	:	Dopamine Receptor 2.
DRD3	:	Dopamine Receptor 3.
DRD4	:	Dopamine Receptor 4.
DRD5	:	Dopamine Receptor 5.
DSM-IV-TR	:	Diagnostic and Statistical Manual of Mental Disorders IV-TR Edition.
DUD	:	Drug Use Disorder.
HCV	:	Hepatitis C Virus.
HIV	:	Human Immuno Difficeny Virus.
HKD	:	Hyper Kinetic Disorder.
HSQ-R	:	Home Situations Questionnaire – Revised.

List of Abbreviations (Cont…)

Abb.		Meaning
ICD-10	:	International Classification of Mental and Behavioral Disorders.
IOWA	:	Inattention/Overactivity with Aggression.
IPT	:	Interpersonal Psychotherapy.
KIDSCID	:	Structured Clinical Instrument for DSM-IV Axis I Disorders for Children and Adolescents.
K-SADS	:	Schedule for Affective Disorders and Schizophrenia for School-Age Children.
MAOIs	:	Monoamine Oxidase Inhibitors.
MAS	:	Amphetamine Salts.
MDMA	:	3,4methylenedioxymethamphetamine.
MINI	:	Mini International Neuropsychiatric Interview.
MPH	:	Methylphenidate.
NIH	:	National Institutes of Health.
NSDUH	:	The National Survey On Drug Use And Health.
ODD	:	Oppositional Defiant Disorder.
OROS-MPH	:	Osmotic-Release Methylphenidate.
PD	:	Personality Disorder.
PET	:	Positron Emission Tomography.
SADS-L	:	Schedule for Affective Disorders and Schizophrenia – Lifetime Version.
SCID I	:	Structured Clinical Interview for Diagnostic Statistical Manual-IV for Axis I disorders.

List of Abbreviations (Cont…)

Abb.		Meaning
SCT	:	Sluggish Cognitive Tempo.
SID	:	Substance Indused Disorder.
SNAP-IV	:	Swanson, Nolan, and Pelham.
SSQ-R	:	School Situations Questionnaire – Revised.
SSRIs	:	Serotonin Reuptake Inhibitors
SUD	:	Substance Use Disorders.
SUDDS	:	Substance Use Disorders Diagnostic Schedule.
UNODC	:	United Nations Office for Drug Control and Crime Prevention.
WHO	:	World Health Organization.
WM	:	Working Memory.
WMH	:	World Mental Health.
WURS	:	Wender Utah Rating Scale.

INTRODUCTION

Attention deficit/hyperactivity disorder (ADHD) is an impairing condition affecting 3–7% of children and 3–5% of adults ***(Charach et al., 2011; Wilens et al., 2011).*** ADHD symptoms result in a large individual and public burden. It is estimated that consequences of ADHD result in the loss of 120 million days of annual lost work in the U.S. labor force, which is equivalent to $19.5 billion lost human capital ***(Kessler et al., 2005).***

ADHD was found to be a major risk factor for the development of substance use disorders (SUDs) and is associated with greater addiction severity as well as worse substance use outcome compared with substance users without ADHD. Several studies have shown a higher prevalence rate of adult ADHD in the substance abusing population than in the general population, ranging from 10 to 24%. Taken together, these data suggest that efforts should be made to detect ADHD-substance abusers, although there is no specific test allowing a compelling diagnosis. ***(Charach et al., 2011; Wilens et al., 2011; Carpentier et al., 2011; Perez et al., 2011)***

ADHD is a difficult diagnosis and is particularly complicated when associated with SUD. There is no objective test for this diagnosis, which is made according to the Diagnostic and Statistical Manual of Mental Disorders IV-TR edition (DSM-IV-TR) criteria, through clinical interview and self-reports. The description of ADHD symptoms in the DSM-IV-TR is based on

the three core symptom clusters seen in children, which are inattention, hyperactivity and impulsivity. The full diagnosis of ADHD, as described in DSM-IV-TR, requires six or more symptoms of inattention and/or six or more symptoms of hyperactivity/impulsivity among nine symptoms described for each aspect. The additional four criteria include some impairing symptoms prior to 7 years of age, some impairing symptoms present in at least two areas of life (home, school, social activities), clear evidence of significant impairment in social, school or work functioning and symptoms that do not occur exclusively during the course of a pervasive developmental disorder, schizophrenia or psychotic disorder and are not better accounted for by another mental disorder ***(Fatseas et al., 2012).***

While the diagnosis of ADHD is ultimately clinically-based, there are structured instruments and interviews that can assist in the evaluation of a patient for ADHD. A comprehensive diagnostic battery, such as might be employed in a research setting, would include, in addition to a comprehensive psychiatric interview, the Structured Clinical Interview for DSM-IV (SCID) ***(First et al., 1995)*** and the Conners Adult ADHD Diagnostic Interview for DSM-IV (CAADID), ***(Conners et al., 1999)*** which systematically assesses adults for both childhood and adult symptoms. However, in many clinical settings, performing a SCID and CAADID is not feasible. A more practical approach is to use a semi-structured clinical interview using the DSM-IV TR criteria for ADHD as a guide (ie, review symptoms in criteria set with patient). The

ADHD Rating Scale-IV ***(Du Paul, 1998)*** and the DSM-IV SNAP checklist ***(Swanson, 1994)*** can also be useful in screening for ADHD symptoms. In any setting, it is essential to gather data from other informants (e.g. partner, parent, or close friend) to better understand the nature and severity of the symptoms and their impact on the patient's functioning.

Although ADHD diagnosis in adults is based on child-specific symptoms, it has been suggested that more specific criteria should be developed in adult. For example, hyperactivity symptoms in adults may rather be expressed through restlessness, constant activity and trend to orient themselves toward very active jobs, leading to tension with environment. Furthermore, impulsivity in adulthood may have more serious consequences than during childhood, such as ending relationships, quitting jobs, overreacting to frustrations or committing more driving violations. Most inattention symptoms include procrastination, difficulty making decisions, poor time management and difficulties in organizing activities ***(Haavic et al., 2010; Fatseas et al., 2012).***

While there is a strong relationship between ADHD and SUD, less is known about the relationship of ADHD subtypes (i.e., inattentive, combined, and hyperactive-impulsive) and SUD. The inattentive subtype is characterized by inattention, distractibility, disorganization, forgetfulness, and lethargy, while the hyperactive-impulsive subtype is characterized by hyperactivity and/or impulsiveness (e.g., interrupting, difficulty waiting turn, fidgetiness). The combined subtype, most commonly represented

in studies of ADHD, includes both inattentive and hyperactive-impulsive symptoms. There are few studies investigating the hyperactive-impulsive subtype, which is much less prevalent, and there are significant concerns regarding its validity ***(Derefinko et al., 2008).*** However, there is a burgeoning literature suggesting different phenotypic profiles for the ADHD inattentive and combined subtypes including different patterns of psychiatric comorbidity e.g. ***(Murphy et al., 2002)*** gender ratios e.g. ***(Gaub et al., 1997)*** and response to medication e.g. ***(Stein et al., 2003).***

Therefore, there may be a different pattern of substance use and/or response to treatment between the inattentive and combined subtypes. The literature investigating the association between ADHD subtypes and SUDs is mixed. Some studies do not report a significant relationship e.g. ***(Murphy et al., 2002).*** While others have suggested that hyperactive/impulsive symptoms are more associated with risk for SUDs e.g. ***(Elkins et al., 2007)*** than inattentive symptoms ***(Loebe et al., 1995).***

Considering the high rate of ADHD comorbidity among SUD patients, it is crucial to promote and integrate an active and systematic diagnostic approach to this disorder in specialized addiction treatment settings. However, the accuracy of adult ADHD diagnosis is frequently challenged by several factors and overlapping symptoms that produce unreliable diagnosis. A detailed comprehensive interview of childhood and adulthood symptoms, including the temporal relationship of both ADHD and substance use with other psychiatric disorders, should maximize

the validity and the reliability of adult ADHD diagnosis in the SUD population. A valid ADHD screening procedure in larger samples of adult SUD patients including different substances needs to be further developed and evaluated to adopt adequate diagnostic services and integrated treatment plans ***(Fatseas et al., 2012).***

There are data from clinical studies suggest that there were important differences at baseline between the ADHD subtypes, with the combined subtype presenting with more severe substance dependence disorder, higher rates of antisocial behavior, and less readiness for treatment than the inattentive type. Both inattentive and combined subtypes of ADHD with comorbid SUD responded equally to treatment. Consequently, subtype designation may not be as relevant when assessing treatment needs for an adolescent with comorbid ADHD-SUD ***(Tamm et al., 2012).***

The treatment needs of individuals with SUD and ADHD need to be considered simultaneously; however, if possible, the SUD should be addressed initially. If the SUD is active, immediate attention needs to be paid to stabilization of the addiction(s). Depending on the severity and duration of the SUD, individuals may require inpatient treatment. Self help groups offer a helpful treatment modality for many ADHD individuals with SUD. In tandem with addiction treatment, SUD individuals with ADHD require intervention(s) for ADHD (and if applicable, comorbid psychiatric disorders). The efficacy of various psychotherapeutic interventions for populations with ADHD and SUD remains to be established. However, data suggests efficacy of cognitive