

Perspective

Pathological Gambling in ADHD: A Review

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Abstract

Attention deficit hyperactivity disorder (ADHD) is a neurobiological condition characterized by developmentally inappropriate and impairing patterns of inattention, hyperactivity, and impulsivity. ADHD in adults is accompanied in 60 to 100% of cases of another psychiatric diagnosis. Attention deficit hyperactivity disorder (ADHD) accounts for approximately 5 to 10% of mental disorders in childhood and adolescence. Symptoms, or some of them, persist into adulthood. Furthermore, research has demonstrated high comorbidity between ADHD and substance use disorder (SUD) and has indicated ADHD as a risk factor for the later development of SUD. However, less research has investigated the link between ADHD and behavioral addiction, such as and pathological gambling (PG). Existing studies support the existence of a relationship between PG and ADHD, although some controversy persists.

Keywords: Hyperactivity disorder; Neurobiological condition; Attention deficit hyperactivity disorder

Introduction

PG is often characterized by impulse control problems, and research has shown high comorbidity with ADHD. Prevalence of ADHD in individuals with PPG has been reported from 5.8%-20%, compared with 4.4% in the general population [1]. The co-occurrence of non-substance related addiction (such as PG) and ADHD has recently received more attention, with the few existing studies indicating a high prevalence of ADHD among treatment seeking pathological gamblers. A recent meta-analysis, which explored the relationships between problem gambling and ADHD and included 24 studies, concluded that there is a significant correlation between symptoms of ADHD and problem gambling. In 2016, the mean prevalence rate of ADHD in individuals with problem gambling was described with 18.5% [2]. Currently, recent studies have reported a considerably higher rate of adult ADHD among problem gamblers, with prevalence about 21%-42.5%, 25%, 23% and 21%. Research on PG with different comorbidities, such as posttraumatic stress disorder; show that these individuals

reported gambling as a way to cope with negative emotions, suggesting differences between diagnostic groups [3]. PG classified as having ADHD symptoms may have different motivations for gambling that could be used as targets for treatment.

ADHD-PG comorbidity may be associated with cumulative risk factors for co-occurring psychiatric disorders [4]. Moreover, an effect of specific comorbidities (anxiety disorders, mood disorders, and substance abuse/dependence) on the likelihood of having a history of ADHD was revealed. Substance use, anxiety, and mood disorders represent risk factors for having a history of ADHD.

Considering the typing of gamblers according to clinical and neurobiological aspects, a robust syndromic overlap of the biologically anchored gambler type with the attention deficit hyperactivity disorder (ADHD) is noticeable [5]. Following the Wender Utah Rating Scale (WURS), which were specially developed for the diagnosis of ADHD in adulthood, patients with ADHD in this phase of life, additional organizational difficulties, emotional lability, and over-responsiveness as well as stress intolerance as particular psychopathological characteristics, have been shown. The underlying disorders of excitation regulation, emotional regulation, and self-esteem in pathological players described by Petry can be found in this population.

Neurobiological Aspects

Neuropsychological studies showed impairments in impulse control, as are characteristic of ADHD, and executive functions in pathological gamblers. Some of the neuropsychological dysfunctions found in pathological gamblers are marked impulsivity, cognitive rigidity, deficit in reaction suppression, imprecise response, disruption of inhibition process, slower time evaluation, disruption organizing

tasks, impaired decisions (risky or choosing), deficits assessing future results, memory impairments, concentration impairments, impaired executive performance, marked novelty searching, marked harm prevention, lack of cooperation, poor self-directedness, deficits in problem solving (finding new procedures), and poor efficacy.

Functional magnetic resonance imaging studies support the neuropsychological findings of a disorder of frontal brain functions in gamblers. Furthermore, they have demonstrated atypical frontostriatal activation when tasks involving switching between response alternatives and inhibition are performed.

In a study about PG and brain damage seventeen gamblers (81%) had a positive medical history for brain harm (mainly traumatic head injury, pre or perinatal complications) [6]. The gamblers, compared with the controls, were significantly more impaired in concentration, memory, and executive functions, and evidenced a higher prevalence of non-right handedness (43%) and, non-left hemisphere language dominance (52%). Electroencephalogram (EEG) revealed dysfunctional activity in 65% of the gamblers, compared with 26% of controls.

There were anatomical discrepancies between gamblers and non-gamblers. Gamblers displayed more gray-matter volume compared to healthy volunteers, according to structural MRI technology. Moreover, gamblers had smaller volumes of the right hippocampus, right thalamus, and left putamen compared to healthy volunteers. Gamblers showed a lower level of activity in the brain region related to impulse control (ventromedial prefrontal cortex) compared to controls, based on event related fMRI however, there were no discrepancies in the responses of the rostral cingulate cortex or dorsolateral frontal cortex. Gamblers had dysfunctional EEG activity compared to healthy controls.

The positive effect of the dopaminergic antidepressant bupropion both in pathological Gamblers and in ADHD can be seen as indications that there are mechanisms common to both disorders at the transmitter level. Changes in serotonergic, noradrenergic and dopaminergic neurotransmission in gamblers have also been demonstrated in neurochemical studies [7]. These findings indicate malfunctions in the transmitter systems mentioned. In this respect, too, there are numerous parallels to ADHD. Patients with damage to the ventromedial frontal cortex are known to exhibit impulsive gambling behavior, make risky choices on the Iowa gambling task, and increase betting in presence of normal probability judgments. Other studies have found impulsivity to be associated with both pathological and problem gambling, particularly in young adults.

Gambling addiction in TDAH is associated with several social adjustment problems. The burden of psychopathological abnormalities that go beyond the actual symptoms of the disease is generally high in ADHD. The overall load of comorbid disorders, which mainly includes personality disorders of the dissocial and emotionally unstable type, mood disorders, and addictions, is also strikingly high.

Concerning comorbidity with addictions, Biederman and co-workers showed that 52% of adults with ADHD were diagnosed with current or previous addictive problems, but only in 27% of a corresponding control population of addicts without ADHD. It is also known that patients with ADHD start using addictive drugs earlier than other addicts, and use addictive drugs more intensively. Addicts with ADHD represent a psychopathologically, particularly distinguished group of patients.

Conclusion

The prevalence of adult ADHD in slot machines was given by Ozga and Brown as 32%. They examined 50 pathological players (25 men and 25 women). Pathological gamblers with ADHD showed more pronounced attention disorders than hyperactive impulsive symptoms. Their gambling addiction was significantly more severe than gamblers without ADHD. Grall-Bronnec examines 84 gamblers using an impulsivity scale. The central consideration was assessing the measures of importance, planning ahead, perseverance, and sensation seeking. The level of impulsiveness of the person concerned was associated with the severity of the game of chance. Finally, a lifetime ADHD was found in 26.3% of gamblers.

Acknowledgment

None

Conflict of Interest

None

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