



Pathologic Gamblers Have Neurocognitive Deficits and Are Less Sensitive to Reward

WASHINGTON, DC—Pathologic gamblers have neurocognitive deficits indicative of prefrontal cortex dysfunction, and their impulsive behaviors may be related to a time perception deficit, reported Heather Berlin, PhD, and colleagues at the 161st Annual Meeting of the American Psychiatric Association. Furthermore, pathologic gamblers are less sensitive to reward and exhibit novelty-seeking behavior, which may be related to their impulsivity and poor decision-making skills. According to the researchers, the study provides important information about the underlying neurobiology of pathologic gambling, which may be useful for developing better cognitive behavioral and pharmacologic treatment strategies.

Neuropsychological Assessment

Pathologic gambling is defined as a persistent and recurrent maladaptive gambling behavior that is characterized by impulsivity, preoccupation with gambling activities, withdrawal symptoms (eg, irritability, restlessness) during abstinence, and pleasure-seeking behavior. Frontal lobe hypoactivity and presynaptic serotonergic function may characterize impulsive disorders such as pathologic gambling, and some studies have suggested a link between patients with prefrontal cortex lesions and pathologic gamblers.

The aim of the study was to provide a baseline neurocognitive and temperament/character profile of pathologic gamblers as opposed to healthy controls. A select neuropsychological battery sensitive to involvement of the prefrontal cortex and other brain areas was administered to 20 pathologic gamblers (mean age, 41.22) and 16 healthy controls (mean age, 39.31): Iowa Gambling Task (IGT); Cambridge Neuropsychological Test Automated Battery (CANTAB); time estimation, production, and pacing tasks; Wechsler Abbreviated Scale of Intelligence (WASI); Barratt Impulsiveness Scale-11 (BIS-11); Temperament and Character Inventory; Frontal Behavior Questionnaire (FBQ); Subjective Emotion Questionnaire; and Neuroticism-Extroversion-Openness Five-Factor Inventory.

Neurocognition and Temperament

According to Dr. Berlin, Assistant Professor of Psychiatry at Mount Sinai School of Medicine in New York City, and colleagues, pathologic gamblers had neurocognitive deficits indicative of prefrontal cortex dysfunction. Pathologic gamblers performed signifi-

cantly worse than healthy controls on the WASI performance subtests and neurocognitive tests of executive function (ie, spatial planning [SOC, Stockings of Cambridge, a subtest of CANTAB] and decision-making [IGT]). The worse the subjects performed on the SOC, the higher were their frontal behavior and harm avoidance scores, and the less extroverted and cooperative they were. The worse they performed on the IGT, the less dependent they were on social reward and the less cooperative they were.

Pathologic gamblers also had a faster subjective sense of time, overestimating time intervals compared with healthy controls, which correlated with their frontal behavior score, self-reported impulsivity score (BIS-11), emotionality, and neuroticism. The researchers speculated that impulsivity in pathologic gamblers may be related to a time perception deficit, both of which were related to a deficit in prefrontal cortex function as measured by the FBQ.

The investigators believe that the temperament and personality profiles of the pathologic gamblers

imply that they are more sensitive to punishment but less sensitive to reward and thus still seek out higher levels of stimulation (novelty-seeking activities), which may be related to their impulsivity, poor decision making, and emotionality.

Reducing Risky Behavior

Stimulating specific regions within the prefrontal cortex with microelectrodes “to prevent and/or eliminate the need ... to pursue risky behaviors is a viable possibility in the future, perhaps as a last resort if the distress ... is severe enough and the patient is resistant to other forms of treatment,” commented Dr. Berlin.

She is “exploring the possibility of stimulating the nucleus accumbens for impulsive control disorders such as pathologic gambling, because the nucleus accumbens and prefrontal cortex (in particular, the orbitofrontal cortex) are part of the dopaminergic system, which is involved in addictive behavior.”

—Larry Lubiner

Treatment Options for Pathologic Gambling

WASHINGTON, DC—Although some patients with pathologic gambling have been responsive to SSRIs, overall results of studies evaluating various treatments for compulsive gambling have been mixed, reported Abid Malik, MD, a staff psychiatrist at the Area Mental Health Center in Garden City, Kansas, at the 161st Annual Meeting of the American Psychiatric Association.

In March 2007, Dr. Malik searched PubMed with the key terms “pathological gambling” and “pathological gambling treatment.” Abstracts of all articles about the treatment of pathologic gambling were reviewed to summarize the treatment of the disorder. In comparison with substance dependence, in which a physiologic limit occurs after a certain amount is taken (eg, overdose, death), there is often no end to pathologic gambling.

According to the researchers, SSRIs have yielded a positive response in some open-label trials, but double-blind placebo-controlled studies have shown conflicting results thus far. Studies of mood stabilizers and antipsychotics, such as lithium, olanzapine, and valproate, have also shown mixed outcomes. In April 2008, Dr. Malik identified two positive, placebo-controlled, double-blind trials involving naltrexone. A few alternatives to pharmacotherapy are also available, including cognitive behavioral therapy and Gamblers Anonymous.

Dr. Malik noted that further double-blind placebo-controlled trials are needed in the field of pathologic gambling.

SUGGESTED READING

Iancu I, Lowengrub K, Dembinsky, et al. Pathological gambling: an update on neuropathophysiology and pharmacotherapy. *CNS Drugs*. 2008;22(2):123-138.

Petry NM, Ammerman Y, Bohl J, et al. Cognitive-behavioral therapy for pathological gamblers. *J Consult Clin Psychol*. 2006;74(3):555-567.