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A family study of pathological gambling ☆

Donald W. Black [a,*], Patrick O. Monahan [b], M'Hamed Temkit [b], Martha Shaw [a]

[a] Department of Psychiatry, Psychiatry Research/2-126B MEB, University of Iowa, Roy J. and Lucille A. Carver College of Medicine, Iowa City, IA 52242, USA

[b] Department of Medicine, Division of Biostatistics, Indiana University School of Medicine, Indianapolis, IN 46202, USA

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Abstract

The cause of pathological gambling (PG) is unknown. The current study was conducted to determine whether PG is familial, and to examine patterns of familial aggregation of psychiatric disorder. To that end, 31 case probands with DSM-IV PG and 31 control probands were recruited and interviewed regarding their first degree relatives (FDRs). Available and willing FDRs were directly interviewed with structured instruments of known reliability, and best estimate final diagnoses were blindly assigned for 193 case and 142 control relatives over age 18 years. The results were analyzed using logistic regression by the method of generalized estimating equations. The lifetime rates of PG and "any gambling disorder" were significantly greater among the relatives of case probands (8.3% and 12.4%, respectively) than among the control relatives (2.1% and 3.5%, respectively) (OR=3.36 for "any gambling disorder"). PG relatives also had significantly higher lifetime rates of alcohol disorders, "any substance use disorder," antisocial personality disorder (ASPD), and "any mental disorder". "Any gambling disorder," alcohol disorder, and "any substance use disorder" remained significant after a conservative Bonferroni correction. Interestingly, PG families were significantly larger than control families. We conclude that gambling disorders are familial and co-aggregate with substance misuse. The data are also suggestive that PG co-aggregates with ASPD. Further research on the heritability of PG is warranted.

Keywords: Addictions; Genetics; Impulse control disorders

1. Introduction

Pathological gambling (PG) was first described more than 100 years ago, though it has only been included in the official nomenclature since 1980 (Bleuler, 1924; American Psychiatric Association, 1980). PG is defined as persistent and recurrent maladaptive gambling behavior that involves loss of control of gambling, progressive deterioration of the disorder, and continuation despite negative consequences (American Psychiatric Association, 1994). Currently classified as an impulse control disorder (ICD), PG involves fundamentally pleasurable or enjoyable behaviors that are taken to extremes, contributing ultimately to disturbed marital and family life, social and occupational impairment, legal and financial problems and, in some cases, suicide (Phillips et al., 1997; Korn and Shaffer, 1999; National Opinion Research Center, 1999). The lifetime prevalence of PG is estimated to range from 1% to 2% of adults based on epidemiologic surveys conducted in communities across the United States (Volberg, 1994; Shaffer and Hall, 2001).

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* Corresponding author. Tel.: +1 319 353 4431; fax: +1 319 353 3003.
E-mail address: donald-black@uiowa.edu (D.W. Black).

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The role of heredity in PG has been relatively unexplored, though long suspected by clinicians. Walters (2001) conducted a meta-analysis of published family history information and concluded that PG runs in families, though the effect was relatively weak. The data he examined was not systematically collected, and mostly based on informal surveys. For example, Lesieur and Klein found that 5% of 182 high school students surveyed reported that one or both parents gambled "too much" and 17% of those students showed signs of problem gambling themselves. In a survey of 702 adolescents, Winters et al. (1993) found that 8.7% reported problem gambling; of these respondents, 80% reported that one or both parents gambled. Lesieur et al. (1986) found that of an inpatient sample of persons with substance abuse or problem gambling, 39% reported that their fathers – and 3% of their mothers – were pathological gamblers.

Other mental disorders as well have been reported to be excessive among the relatives of persons with PG. In one of the few systematic attempts to collect family history information, Linden et al. (1986) calculated a morbidity risk of 17% for major mood disorders and 18% for alcohol abuse/dependence among 175 first degree relatives (FDRs) of 25 pathological gamblers. Ramirez et al. (1983) reported that 50% of 51 pathological gamblers had a parent with alcohol abuse. Roy et al. (1988) reported that 33% and 24% of first-degree relatives of 24 pathological gamblers had mood disorders or alcohol abuse, respectively. We recently reported (Black et al., 2003) results from a study of 14 subjects evaluated on the basis of the Family History Research Diagnostic Criteria (FH-RDC); 31% of 75 PG relatives had a lifetime alcohol disorder, 19% had lifetime major depression, 5% had a lifetime drug use disorder, 8% had a lifetime generalized anxiety disorder, and 5% had an antisocial personality disorder (ASPD). Psychiatric disorders in general were more frequent among PG relatives than those reported in a sample of control relatives.

Twin studies can be very informative regarding the influence of heredity. In a small study of 21 monozygotic (MZ) and 25 dizygotic (DZ) twin pairs, Winters and Rich (1998) reported moderate heritability estimates for "high action" games in DZ men but not for "low action" games, or in women for either game type. They concluded that genetic influences could be involved in the expression of gambling but differ for men and women.

Other data suggesting that PG is heritable come from a study of 3359 twin pairs who were interviewed regarding their gambling symptoms and behaviors. Eisen et al. (1998) concluded that heredity explained from 35% to 54% of the liability to develop the five symptoms of PG. In a subsequent analysis (Slutske et al., 2001), these authors suggested that PG, substance use disorders, and antisocial personality disorder constituted a genetically linked "externalizing factor." These investigators estimated that about 50% of the variation in risk for PG was accounted for by genetic factors, and that the other 50% was due to nonfamilial environmental factors unique to the individual. Krueger et al. (2002) recently reported that the externalizing factor has a high heritability (0.81) and may represent a common genetic diathesis for these conditions.

In summary, while family history studies have been methodologically weak, data suggest that PG may be associated with an increased frequency of PG, substance use disorders, mood disorders, and antisocial personality disorder in first degree relatives (FDRs). The present study was conducted to extend our knowledge regarding the familial nature of PG and to improve upon those that had preceded it. Probands with PG and controls were recruited from the community, and comprehensive family history information was collected. All willing and available FDRs were interviewed using structured assessments of known reliability, and then blindly evaluated to yield a best estimate diagnosis for each FDR. The study was undertaken to determine 1) whether PG is familial, and 2) patterns of familial aggregation of psychiatric illness in family members of PG subjects. The results are reported herein.

2. Methods

2.1. Subjects

Probands with PG were recruited through newspaper advertisements and news releases; some had participated in medication trials ($n=5$). All PG probands met DSM-IV criteria (American Psychiatric Association, 1994) for PG and were required to have a score ≥ 5 on the South Oaks Gambling Screen (SOGS) (Lesieur and Blume, 1987) a questionnaire shown to differentiate problem from non-problem gamblers. (A score of 0–2 on the SOGS indicates no problem; a score of 3 to 4 indicates problematic gambling; and a score of ≥ 5 indicates PG.) Exclusions included the presence of a psychotic disorder, cognitive impairment, or inability to provide informed consent. (One prospective proband was excluded because of a diagnosis of schizophrenia.)

The control group consisted of individuals recruited through news advertisements in which we sought