

A twin study of smoking, nicotine dependence, and major depression in men

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This study examined the nature of the relationship among lifetime major depression, smoking, and nicotine dependence. Subjects were 8,169 male twins from the Vietnam Era Twin Registry. Biometrical modeling demonstrated a genetic influence on daily smoking, nicotine dependence, and major depression, and a family environmental influence on daily smoking. Genetic factors influencing nicotine dependence also strongly influenced major depression. We also compared probands with a history of major depression ($n=398$) from pairs discordant for major depression, their nondepressed cotwins ($n=364$), and controls ($n=1,863$) on a number of secondary smoking outcomes. Major depression was associated with current daily smoking and certain nicotine withdrawal symptoms. Individuals with a familial vulnerability for major depression, even without a personal history of major depression, were more likely to smoke despite a serious illness and to report nervousness, restlessness, difficulty concentrating, and depressed mood during past quit attempts. Among the 237 monozygotic pairs discordant for major depression, depressed probands were more likely to have a lifetime history of nicotine dependence than were cotwins. Findings extend Kendler and colleague's (1993) study of female twins by demonstrating in men that shared genetic factors predispose not only to major depression and daily smoking but also to major depression and nicotine dependence.

Introduction

The association between depression and cigarette smoking has been well documented over the past two

decades. In cross-sectional studies, smokers, compared with never-smokers, have higher rates of major depression (Breslau, Kilbey, & Andreski, 1991), and smokers, particularly those who are nicotine dependent, are more than twice as likely as nonsmokers to have a history of major depression (Breslau & Johnson, 2000; Glassman et al., 1990). The lifetime prevalence of depression appears to be especially high among smokers in clinic-based smoking cessation treatment, with rates as high as 53% among studies not targeting depression-vulnerable smokers (Hitsman, 2006; Hitsman, Borrelli, McChargue, Spring, & Niaura, 2003). The lifetime prevalence of major depression among the general population in the United States is approximately 13% (Hasin, Goodwin, Stinson, & Grant, 2005).

In prospective studies, depression has been associated with smoking initiation in the presence of peer smoking (Patton et al., 1998), regular smoking (Breslau, Novak, & Kessler, 2004; Breslau, Peterson, Schultz, Chilcoat, & Andreski, 1998), and

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