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Newly diagnosed panic disorder and the risk of erectile dysfunction: A population-based cohort study in Taiwan

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ABSTRACT

Previous studies indicated that panic disorder is correlated with erectile dysfunction (ED). The primary aim of this study was to explore the incidence rate of ED among panic disorder patients in an Asian country. The secondary aim was to compare the risk of ED in panic disorder patients that were treated with different kinds of antidepressants, and to explore the possible mechanism between these two disorders. We identified 1393 male patients with newly diagnosed panic disorder from the Taiwan's National Health Insurance Database. Four matched controls per case were selected for the study group by propensity score. After adjusting for age, obesity and comorbidities, the panic disorder patients had a higher hazard ratio of ED diagnosis than the controls, especially among the untreated panic disorder patients. This retrospective dynamic cohort study supports the link between ED and prior panic disorder in a large sample of panic disorder patients. This study points out the need of early antidepressant treatment for panic disorder to prevent further ED.

1. Introduction

Panic disorder is characterized by an acute intense attack of anxiety accompanied with feelings of impending doom. Mean age at first onset is usually early to middle adulthood (Weissman et al., 1997). The 12-month and lifetime prevalence of panic disorder in the United States population (age 15–54 years) was 2.7% and 4.7% (Kessler et al., 2005). It has been hypothesized that there is a significant overlap between panic disorder symptoms and sexual arousal sensations, which may lead to sexual avoidance in patients with panic disorder (Sbrocco et al., 1997). Erectile dysfunction (ED) is defined as the inability to achieve or maintain an erection sufficient for sexual performance (Lewis et al., 2010). Previous studies indicated that panic disorder is correlated with ED (Figueira et al., 2001; Okulate et al., 2003).

The risk factors for panic disorder include age, medical comorbidity, and obesity (Hamer et al., 2012; Rustad et al., 2011). ED shares several risk factors with panic disorder, such as metabolic syndrome (MS), obesity, hyperlipidemia, diabetes mellitus (DM), hypertension and cardiovascular disorders (CVD) (Gariepy et al., 2010; Lykouras and Michopoulos, 2011; Player and Peterson, 2011; Todaro et al., 2007). The common comorbidity of these diseases suggests a possible common pathogenesis of panic disorder and ED. The underlying causes are probably biological in nature, as the relationship between panic disorder and sexual dysfunction has been replicated cross-culturally (Figueira et al., 2001; Sbrocco et al., 1997).

Antidepressant have differing effects on sexual function, presumably due to variations in their pharmacological properties. Some antidepressant medications, including selective serotonin reuptake inhibitor (SSRI), tricyclic antidepressant (TCA), serotonin-norepinephrine reuptake inhibitor (SNRI) and monoamine oxidase inhibitor (MAOI), have been reported to have higher risk of sexual dysfunction in both sexes (Kennedy and Rizvi, 2009; Lee et al., 2010), but the mechanism is still unclear. Because these antidepressants modulate serotonin concentration, it is generally thought that elevated serotonin levels diminish sexual function. The possible mechanism includes: (1) Serotonin in the periphery directly reduces sensation in the anatomical structures of the

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reproductive system. (2) Stimulation of 5-HT_2 and 5-HT_3 receptors had negative effects on sexual function. (3) Serotonin inhibits nitric oxide production, which normally enables vasodilation and allows sufficient blood supply to the sexual organs during sexual response cycle (Higgins et al., 2010). A recent meta-analysis indicates that norepinephrine-dopamine reuptake inhibitor (NDRI) such as bupropion is associated with a lower rate of treatment-emergent sexual dysfunction than is seen with SSRIs (Gartlehner et al., 2011); this is possibly due to the predominantly noradrenergic–dopaminergic mechanism of action of bupropion. A systematic review suggests noradrenergic and specific serotonergic antidepressant (NaSSA) such as mirtazapine is less likely than other antidepressants to cause adverse sexual effects (Watanabe et al., 2011), and this is probably due to its antagonist effects on the 5-HT_{2C} receptor (Alcantara, 1999).

Although previous investigations have discussed the relationship between ED and panic disorder, the statistical power was limited due to their small sample sizes, and few studies have examined an Asian population. One of the purposes of the present study was to explore the incidence rate of ED among panic disorder patients in an Asian country.

The standard treatment of panic disorder is antidepressants which may confound the effect of panic disorder on ED. Besides, there has been no previous study comparing the risk of ED in panic disorder patients who were treated with or without antidepressants. In this naturalistic study design, we can observe the difference of the risk of ED in panic disorder patients who were treated with different class antidepressants or without treatment.

2. Methods and materials

2.1. Data sources

This dynamic cohort study was based on a retrospective analysis of administrative claims data extracted from Taiwan's National Health Insurance (NHI) program. Taiwan launched a single-payer NHI program on March 1, 1995. The National Health Research Institutes in Taiwan established the Longitudinal Health Insurance Database 2010 (LHID2010), which contains all the original claims data and registration files of 1,000,000 individuals randomly sampled from the 2010 Registry for Beneficiaries

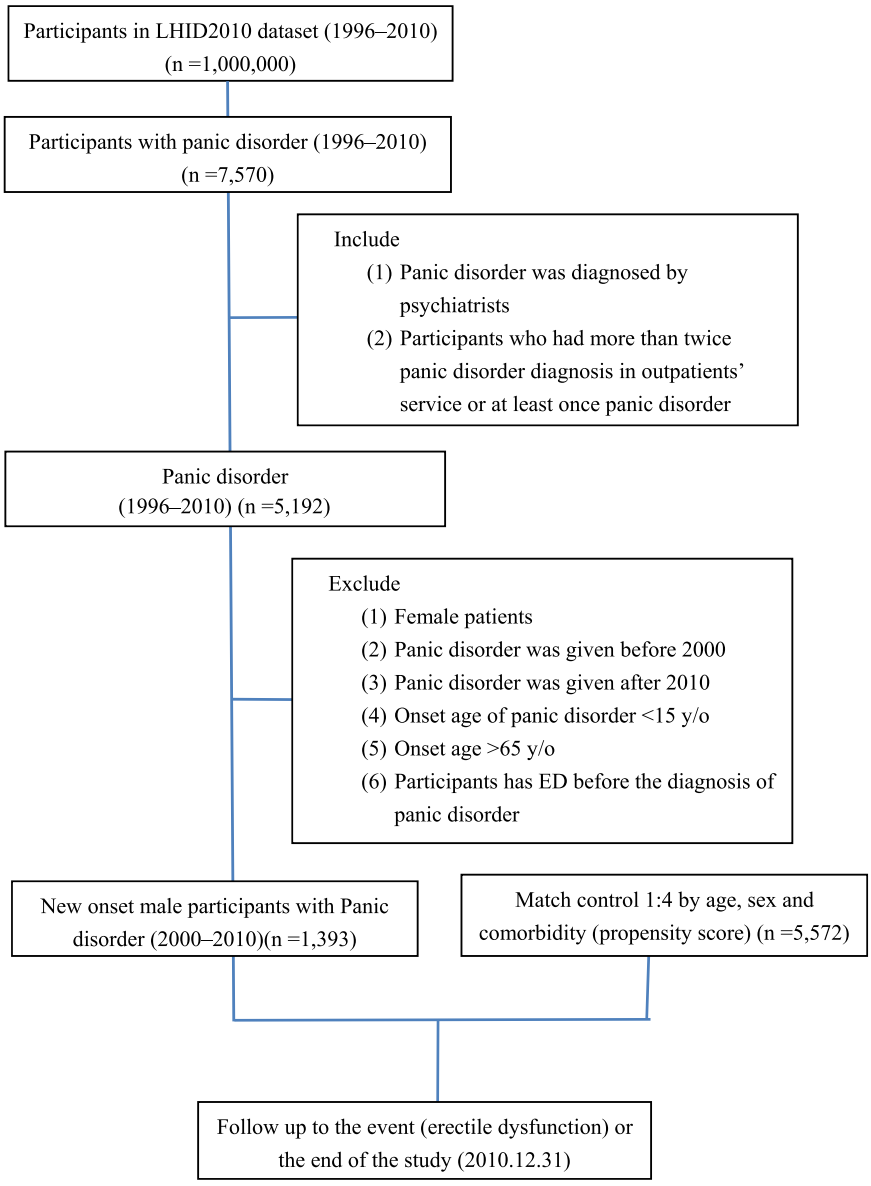

Fig. 1. Consort diagram of participant selection.