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Epidemiological aspects of intermittent explosive disorder in Japan; prevalence and psychosocial comorbidity: Findings from the World Mental Health Japan Survey 2002-2006

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ABSTRACT

The purpose of the present study is to evaluate the prevalence of intermittent explosive disorder (IED) as well as its comorbidity with other mental disorders in a Japanese community sample. Subjects were 4,134 residents in selected sites in Japan. Diagnoses of mental disorders are based on the World Mental Health Survey Initiative Version of the World Health Organization Composite International Diagnostic Interview. Lifetime and 12-month prevalence of IED were 2.1% and 0.7%, respectively, whereas those of narrow IED were 1.2% and 0.6%, respectively. Male gender and young age were positively associated with an increased prevalence of IED. Mood and anxiety disorders as well as suicidal ideation were shown to be associated with IED in both genders. The overall association between anxiety disorders and IED was stronger in women than in men. Positive association of substance use problems with IED was also observed. Similar findings were observed between those psychosocial factors and narrow IED. These results suggest that people having those mixed complications might have a high suicidal risk. Further research using psychological measures for anger suppression will lead to more thorough understanding of the effects of IED on psychosocial comorbidity and suicidal risk.

1. Introduction

Intermittent explosive disorder (IED) is characterized by discrete episodes of aggressive impulses that result in serious assaultive acts towards people or destruction of property, and is classified by the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV) as one of the impulse-control disorders (American Psychiatric Association, 2000). This disorder causes major social or familial disruptions to patients, who are sometimes obliged to resign from their position or divorce because of their behavioral problems.

Formerly, few epidemiological studies had been conducted with regard to this disorder, and a lack of reliable clinical evidence regarding diagnosis, treatment, or prognosis was all too common (Olvera, 2002). This was partly due to the instability of the definition of IED, which has changed over the years, resulting in inconsistent findings on IED prevalence (Olvera, 2002). Some studies have assessed the prevalence of IED among psychiatric clinical-based populations (Coccaro et al., 1998; Lejoyeux et al., 1999; Olvera, 2002). Prevalence estimated at approximately 25% was reported among patients with personality disorders with impulsive-aggressive behavior (Coccaro et al., 1998) or alcohol dependence (Lejoyeux et al., 1999), whereas prevalence among the general population of psychiatric outpatients was reported to be 3.1-6.5% (Olvera, 2002). It was also reported that 2% of all people admitted to a university hospital psychiatric service were diagnosed as IED, among whom 80% were males (Kaplan and Sadock, 1998). Coccaro (2000) indirectly estimated the community rate of IED at 0.9-1.8% based on the previous clinical and population-based studies.

Recently, however, several epidemiological studies of IED were conducted in general populations (Coccaro et al., 2004; Kawakami et al., 2005; Kessler et al., 2006; Ortega et al., 2008; Fincham et al., 2009). Although the previous clinically based studies have reported a low prevalence of IED, the population-based prevalence of IED in recent reports has been shown to be higher than previously thought (Coccaro et al., 2004; Kessler et al., 2006; Fincham et al., 2009). In addition, a high level of comorbidity is noted with mood, anxiety, and substance-related disorders (Kessler et al., 2006; Amara et al., 2007; Ortega et al., 2008; Fincham et al., 2009). Since the former two categories are also strongly associated with substance-related disorders, it is important to evaluate the actual situation of the association between substance use and IED in a general population, so as to establish an effective IED treatment strategy.

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Previous studies of IED took no account of the viewpoints of cross-cultural factors, in spite of the fact that behavioral problems related to impulsivity-control are likely to be strongly affected by cultural circumstances. In general, Japanese tend to more readily suppress their emotions, (especially overt anger) than Westerners or other Asian populations. This cultural proclivity may, to some extent, affect plain behavioral problems such as IED among Japanese.

The purpose of the present study is to evaluate both a lifetime and 12-month prevalence of IED as well as the comorbidity of mood, anxiety, and substance-related disorders with IED together with associations with behavioral problems caused by commonly used drugs, and suicidal ideation in a Japanese community sample based on data specific to Japan that were collected between 2002 and 2006 as part of the World Mental Health Surveys (WMH-J 2002-06 Survey) (WHO World Mental Health Survey Consortium, 2004).

2. Methods

2.1. Subjects

Eleven community populations in Japan were selected as study sites in 2002-2006. The sites included three urban cities and eight rural municipalities. At each survey site, random sample was selected from residents aged 20 years or older based on a voter registration list or a resident registry. Residents who could not speak Japanese, had moved, died, or were hospitalized at the time of the survey were excluded. After a letter of invitation was sent or a welfare commissioner sounded out a resident's opinion, trained interviewers contacted the subjects and interviewed those who agreed to participate in the survey using a standardized instrument. A total of 4,134 concerned community residents participated during the study period. The final response rate was estimated to be 55.1%, except in Nagasaki City where a different survey method had been used (response rate 26%). The response rate at 10 sites ranged from 41 to 82%.

In the present survey, an internal sampling strategy was used to reduce a respondent's burden by dividing the interview into two parts (Kawakami et al., 2005). Part I included a diagnostic assessment, which all respondents were required to complete. Part II covered information about the correlates of a disorder. A subsample of part I respondents who met the criteria for any mental disorder, and a probability subsample of approximately 10% of other respondents were given part II ($n = 1,725$). As mentioned below, when we use information from part II data, the subjects should be restricted to part II only to compensate for the difference in weighted values between parts I and II. Thus, the present analyses principally included part I data, except for analyses of the association between substance-related problems and IED.

To compensate for differences between the sample and population characteristics due to frame under-coverage, non-response and sampling variability, all samples were weighted to adjust for differential probabilities of selection and were post-stratified to match the population distributions on the cross-classification for sex and age, for which the non-response weight in a given group for sex and age was the inverse of the response rate in this category (Kawakami et al., 2005).

2.2. Assessments of mental disorders

2.2.1. Intermittent explosive disorder

Three or more lifetime anger attacks were required to apply the DSM-IV criterion A for IED requirement of "several attacks." With special reference to the report by Kessler et al. (2006) who used almost the same methods as ours, we also created a narrow definition of lifetime IED that requires three attacks in the same year as described in that paper. Furthermore, we created a "broad only" category which was defined as three or more lifetime attacks without ever having as many as three attacks in a single year. Similarly, a narrow definition of 12-month IED required three attacks in the past 12 months, whereas a broad definition required three lifetime attacks and at least one attack in the past 12 months. Although Kessler et al. (2006) created "intermediate only" and "broad only" categories, we did not use such categories because the numbers of "intermediate only" and "broad only" in our sample were three and one, respectively, which was extremely few compared with those reported by Kessler et al. (2006).

DSM-IV criterion B for IED requires the aggressive "grossly out of proportion to any precipitating psychosocial stressor," and criterion C excludes the possibility that the anger attack is caused by other mental or organic disorders as well as by the direct effect of a substance. These criteria were ascertained according to the prescribed interview procedures of World Mental Health Survey Initiative Version of the World Health Organization Composite International Diagnostic Interview (WMH-CIDI) described below.

Impairment due to lifetime IED was assessed by property damage as well as the number of times the respondent or someone sought medical attention due to an injury caused by the respondent's anger attacks. On the other hand, 12-month questions ask respondents to rate the extent to which their IED interfered with their life and activities during the past 12 months using the Sheehan Disability Scale (Leon et al., 1997), which are visual analogue scale with 0-10 points that ask how much a disorder interfered with home management, work, social life, and personal relationships. A score of seven or more was defined as a severe or very severe condition.

2.2.2. Mood and anxiety disorders

The Mini-International Neuropsychiatric Interview (M.I.N.I), which is widely used as a convenient structured diagnostic interview, deals with 10 mental disorders which can be categorized into mood and anxiety disorders, based on the standard of a 12-month prevalence of 0.5% or more (Sheehan et al., 1998). Among these 10 categories, we used bipolar I and II disorders instead of mania. Obsessive-compulsive disorder was not assessed in the present survey, while post traumatic stress disorder was examined in part II data. Therefore, we chose the following nine disorders for evaluating the comorbidity of mood and anxiety disorders with IED: Anxiety disorders (panic disorder [PD], agoraphobia with/without panic disorder [AGO], specific phobia [SP], social phobia [SO], and generalized anxiety disorder [GAD]): Mood disorders (major depressive disorder [MDD], dysthymia [DYS], and bipolar I and II disorders).

Details regarding factors such as training of interviewers, field procedures, and survey instruments were given elsewhere (Kawakami et al., 2005). WMH-J diagnoses are based on WMH-CIDI (Kessler and Üstün, 2008), a fully structured lay-administered diagnostic interview that generates data on both the International Classification of Diseases, 10th Revision (ICD-10) (World Health Organization, 1993) and DSM-IV (American Psychiatric Association, 1994). In the present study, DSM-IV criteria were used for diagnoses of the above mental disorders.

The diagnostic hierarchy rules of DSM-IV (National Comorbidity Survey, 2005) were used for IED, GAD, MDD, and DYS. Since there were very few subjects in the 12-month prevalence category, we used the lifetime prevalence of these disorders for the analyses regarding the comorbidity with IED. In addition, the association between the lifetime prevalence of serious suicidal ideation and IED was also evaluated.

2.2.3. Substance use

In the same way as the comorbidity analyses of mood and anxiety disorders, the associations between IED and final diagnosis of substance-related disorders by DSM-IV criteria, such as alcohol abuse and dependence, drug abuse and dependence were also evaluated according to the interview procedure of WMH-CIDI, in which each DSM-IV item was transformed into corresponding question. The current interview list included three categories of the relevant substances or drugs, i.e., every kind of beverage containing alcohol (e.g., beer, wine, whisky, vodka), medical drugs (e.g., analgesics, benzodiazepines, methylphenidates), and some illegal substances in Japan (e.g., cannabis, cocaine, marijuana, heroin). These substances or drugs are listed in the diagnostic criteria of substance-related disorders in DSM-IV.

Among these drugs, the commonly used medications that were readily available, such as analgesics, tranquilizers (e.g., benzodiazepines), and methylphenidates were possible agents affecting IED symptoms at the level of daily life. Hence, we evaluated the relation between IED and the use of such drugs (except for medical purposes) by relevant questions included in WMH-CIDI. Those drugs should be used for medical purposes only according to a physician's instructions, because they can often cause substance-related disorders such as dependence or abuse. The experiences of such drug use were ascertained by showing the respondents a list of relevant drugs for supporting their recall.

In addition, the association between a history of alcohol-related issues as well as the possibility of their occurrence and IED was also evaluated. Such experiences included troubles in coping with social or familial obstacles, interpersonal difficulties caused by drinking, driving drunk, or having been arrested for that offence. Questions regarding the above problems were also extracted from WMH-CIDI questions for the diagnosis of alcohol abuse. In addition, these alcohol abuse and dependence symptoms such as alcohol tolerance, withdrawal symptoms, or failure of temperance among subjects with lifetime IED within the recent 12 months were confirmed. Harmful effects due to drinking within the past 12 months were also assessed by questions regarding five domains in physical or social impairments (i.e., harm to physical health, damage to family, impulsive action with regret, breach of trust, and feeling of unhappiness). Further, the comorbid status was evaluated between lifetime IED, and diagnoses of alcohol abuse and dependence within one month.

The use of obviously illicit drugs such as cannabis, cocaine, or marijuana was not taken into account because the characteristics of the drug users were considered not to be representative of the general population (i.e., extremely anti-social), and the number of subjects available for analysis was very few.

2.3. Statistical analysis

Comparisons of courses or severities between narrow and 'broad only' groups in lifetime IED were conducted by analysis of variance. In these comparisons and the following descriptive analysis of 12-month IED, subjects who reported their number of lifetime attacks to be more than (number of years with attacks x highest number of annual attacks) or those with missing values of such variables were excluded because their recollection of the cause of the anger attacks was considered to be inaccurate ($n = 25$ for lifetime IED, and $n = 10$ for 12-month IED).

Logistic regression analysis was used in the following three steps. First, bivariate or multivariate logistic regression models were computed to determine the association of lifetime and 12-month IED with demographic and personal characteristics. In these regression models, analyses for IED and narrow IED were conducted separately, because narrow IED is considered to be clinically more