Addictive Behaviors 47 (2015) 1–4

Contents lists available at ScienceDirect

Addictive Behaviors

Short Communication

The epidemiology and progression time from transient to permanent psychiatric disorders of substance-induced psychosis in Taiwan

Wei-Ling Chen [a,b], Chia-Hung Hsieh [b,c,d,e], Hao-Teng Chang [b,c,f], Chia-Chun Hung [a,*], Chin-Hong Chan [a,**]

[a] Department of Psychiatry, Taichung Veterans General Hospital, Taichung, Taiwan, ROC
[b] Aging Medicine Program, China Medical University, Taichung, Taiwan, ROC
[c] Graduate Institute of Basic Medical Science, China Medical University, Taichung, Taiwan, ROC
[d] Department of Medical Research, China Medical University Hospital, Taichung, Taiwan, ROC
[e] Department of Biomedical Informatics, Asia University, Taichung, Taiwan, ROC
[f] Department of Computer Science and Information Engineering, Asia University, Taichung, Taiwan, ROC

HIGHLIGHTS

- The average prevalence of AIPD was 2.94 per 100,000 person-years in Taiwan.
- The average prevalence of SIPD was 5.67 per 100,000 person-years in Taiwan.
- 10.9% to 24.3% of AIPD or SIPD patients have the permanent psychiatric disorders.
- The mean time of psychotic and affective transformation was 1.9 to 2.7 years.

ARTICLE INFO

Available online 21 February 2015

Keywords:
Alcohol-induced psychotic disorder
Substance-induced psychotic disorder
Substance-induced psychosis
National Health Insurance Research Database (NHIRD)

ABSTRACT

Introduction: Substance-induced psychosis (SIP), including alcohol-induced psychotic disorder (AIPD) and substance-induced psychotic disorder (SIPD), is gradually increasing in importance in clinical practice. However, few studies have investigated the epidemiology and progression time from transient to permanent psychiatric disorders for AIPD and SIPD patients.
Methods: We utilized the National Health Insurance Research Database (NHIRD) to investigate the incidence and prevalence of AIPD and SIPD in Taiwan and determined the timing of AIPD or SIPD followed by the development of persistent psychotic conditions.
Results: The average incidence and prevalence were 1.97 and 2.94 per 100,000 person-years for AIPD, 3.09 and 5.67 per 100,000 person-years for SIPD in Taiwan. Moreover, 10.9% to 24.3% of subjects with either AIPD or SIPD had a change in diagnosis to either schizophrenia or affective disorder, and ~50% of patients had a psychotic or affective transformation in their first year after AIPD and SIPD diagnoses. The mean progression time of psychotic or affective transformation was 1.9 to 2.7 years.
Conclusions: SIP is a predictive factor for persistent psychotic and affective transformation, and a three-year follow-up may be an optimal clinical practice to prevent psychotic or affective transformation in 60% of patients.

1. Introduction

Several substances, such as amphetamine, cannabis and other stimulants, and alcohol have long been considered as psychotogenic ingredients and play a role in the precipitation of psychosis in the abusers (Fiorentini et al., 2011; Jordaan & Emsley, 2014). Now, more attention has been given to the sequence of psychiatric diagnosis, which has transformed from alcohol-induced psychotic disorder (AIPD) or substance-induced psychotic disorder (SIPD), because the unstable mental condition beyond the physiological presence of the substance is often detected in clinical practice.

Recurrent psychotic experiences during amphetamine abstinence period had been mentioned (Akiyama, 2006; Kittirattanapaiboon et al., 2010). Chronic cannabis dependence patients had been widely discussed in cannabis-induced psychosis (Henquet et al., 2005) and became schizophrenia in high risk (Andreasson, Allebeck, Engstrom, & Rydberg, 1987; Moore et al., 2007). In alcoholism, ~10–20% of

* Correspondence to: C.-C. Hung, Department of Psychiatry, Taichung Veterans General Hospital, No. 1650, Taiwan Boulevard Sec. 4, Taichung, 40705 Taiwan, ROC. Tel.: +886 4 23592525#3402; fax: +886 4 24619627.
** Correspondence to: C.-H. Chan, Department of Psychiatry, Taichung Veterans General Hospital, No. 1650, Taiwan Boulevard Sec. 4, Taichung, 40705 Taiwan, ROC. Tel.: +886 4 23592525#3400; fax: +886 4 24619627.
E-mail addresses: weiling325@vghtc.gov.tw (W.-L. Chen), chhsiehcmu@mail.cmu.edu.tw (C.-H. Hsieh), htchang@mail.cmu.edu.tw (H.-T. Chang), cocohung@vghtc.gov.tw (C.-C. Hung), alwin@vghtc.gov.tw (C.-H. Chan).

http://dx.doi.org/10.1016/j.addbeh.2015.02.013
0306-4603/

patients with a history of alcoholic hallucinosis would develop chronic schizophrenia-like symptoms (Tsuang, Irwin, Smith, & Schuckit, 1994). Moreover, not only persistent psychotic states but also long-term unstable mood conditions need to be discovered after AIPD/SIPD was diagnosed. The high rate of exhibiting depressed mood and suicidal ideation of previous amphetamine psychosis patients was reported even after long-term abstinence (Akiyama, 2006). A high incidence of major depressive disorder was also found in the patients of early cannabis exposure and continuation into their adult life (Chadwick, Miller, & Hurd, 2013). In addition, there was a 44% rate of depressed mood and 21% rate of suicide attempts in the alcoholic hallucinosis patients (Tsuang et al., 1994). These findings provide an association between AIPD/SIPD and permanent mental disorders that can lead to the hypothesis that AIPD/SIPD may transform to permanent mental disorders.

Despite that the progression for AIPD/SIPD is known, the actual incidence and prevalence of AIPD/SIPD in the general population remain poorly characterized. Moreover, associated risk factors of AIPD/SIPD-induced permanent mental disorders (transformed-psychosis and transformed-affective disorder) and prognosis of transformed mental disorders are also unclear. To provide a more delicate management of AIPD/SIPD, we conducted a cohort study using a national-population database in Taiwan.

2. Methods

A nationally representative cohort of 1,000,000 individuals from the National Health Insurance database was followed up for the years 2000 to 2011. Their claims data was used for investigating the incidence and prevalence of AIPD and SIPD in Taiwan and determined the timing of AIPD or SIPD followed by the development of persistent psychotic conditions. Distributions of AIPD/SIPD transformed and non-transformed subjects, typical schizophrenia, and typical major depressive disorder/bipolar disorder in age, gender, and death rates were examined using χ^2 tests for categorical variables and dependent t-tests for continuous variables. p values < 0.05 from two-tailed tests were considered statistically significant. Detailed procedures can be found in the Supplementary methods.

3. Results and discussion

3.1. Increased female/male incidence ratio in substance-induced psychosis

Two hundred thirty-two persons, consisting of 215 men and 17 women, had AIPD, and 374 persons, including 269 men and 105 women, had SIPD from 2000 to 2011. The mean incidence rates were 1.968 per 100,000 person-years for AIPD and 3.093 per 100,000 person-years for SIPD. The incidence rate of SIPD was similar to that derived from Nottingham adults during the last two decades of the 20th century which was less than 5 per 100,000 years (Kirkbride et al., 2009). Besides, female and male incidence rates were ranged from 0.21 to 0.66 per 100,000 person-years and 2.51 to 5.14 per 100,000 person-years for AIPD respectively, and 1.06 to 3.21 and 1.92 to 7.62 per 100,000 person-years for SIPD respectively. It suggests that male sex is a stronger risk factor for AIPD and SIPD. Moreover, female-to-male incidence rate ratios

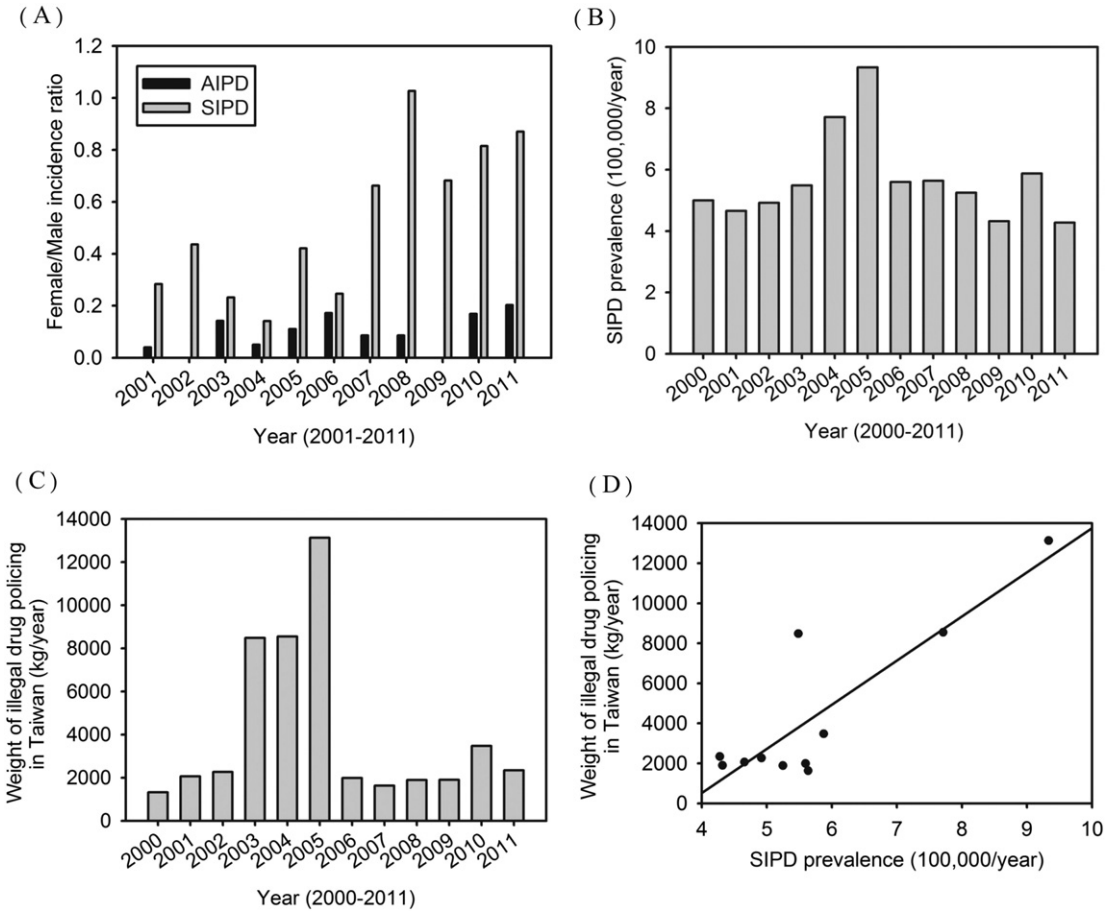

Fig. 1. (A) Female-to-male incidence rate ratio (FMIRR) for AIPD and SIPD over time. An increased ratio was noted gradually, especially in SIPD patients. (B) The prevalence of AIPD and SIPD over time and its association with the weight of illegal drug policing. The prevalence of SIPD from 2000 to 2011. (C) The weight of illegal drug policing from 2000 to 2011. (D) A positive linear relationship was seen between SIPD prevalence and annual weight of illegal drug policing. The Pearson correlation coefficient (r) was 0.819 ($p < 0.002$).