

Original Article

Alcohol Consumption or Excessive Use of Psychotropic Medication Prior to Suicidal Self-injury in Patients with Adjustment Disorder, Depression, and Schizophrenia: A Cross-sectional Study

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The use of alcohol or drug(s) prior to self-injury is a possible inducing factor for suicidal self-injuries among patients with adjustment disorder. We analyzed the cases of 175 individuals who were admitted to the intensive care unit (ICU) of Tokyo Medical and Dental University Medical Hospital for suicidal self-injury to determine whether alcohol consumption or an excessive use of prescribed psychotropic medications prior to self-injury is more common in patients with adjustment disorder. During a 7-year period (July 2006 to June 2013) following their deliberate self-injuries, 971 patients were admitted to the ICU. Our study sample (n = 175) was restricted to patients with adjustment disorder (n = 48), major depressive disorder (n = 90), or schizophrenia (n = 37). The outcome variable was alcohol consumption or excessive use of medications prior to suicidal self-injury. A logistic regression analysis revealed that the patients with adjustment disorder more commonly showed alcohol consumption or excessive medication use prior to their suicidal self-injury compared to those with schizophrenia (odds ratio: 8.10; 95%CI: 2.97-24.60). To inhibit suicidal self-injury among patients with adjustment disorder, it is important to continue efforts to provide psychoeducation about alcohol use and to instruct the patients to take their prescribed medication(s) only as directed by their physician.

Key words: alcohol, psychotropic medications, self-injury, adjustment disorder

The use of alcohol or drugs prior to a self-injury is a possible inducing factor for suicidal self-injuries (e.g., jumping from a height, hanging, gun use, carbon monoxide poisoning) among patients with mental disorders [1-5]. Individuals with mood disorders have been shown to be more likely to use alcohol or drugs prior to self-injury compared to individuals with schizophrenic spectrum disorder [6]. That research suggested that individuals with mood disorders use alcohol or drugs to relieve their anxiety and prepare

themselves for what they have already determined to do, whereas individuals with schizophrenic spectrum disorder have a lack of hesitation in completing a decided act. It could thus be speculated that patients with mood disorders consume alcohol and drugs in order to become able to confess their fear of committing serious self-injury, or that the suicidal ideation of individuals with schizophrenic spectrum disorder may be stronger than that of individuals with mood disorder.

Adjustment disorder and depression are major mental illnesses that lead to self-injury requiring hospital

Received March 20, 2019; accepted September 27, 2019.

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Conflict of Interest Disclosures: No potential conflict of interest relevant to this article was reported.

admission [7]. The intensity of suicidal ideation in patients with adjustment disorder is reported to be equivalent to that in patients with mood disorder [8]. However, there has been little research on self-injury among individuals with adjustment disorders. We conducted the present study to compare alcohol consumption and excessive use of one or more psychotropic medications prior to suicidal self-injury among patients with adjustment disorders, depression, and schizophrenia.

Patients and Methods

Design and setting. This was a cross-sectional study of individuals who were admitted to the intensive care unit (ICU) of Tokyo Medical and Dental University Medical Hospital during the 7 years between July 1, 2006 and June 30, 2013 following a deliberate self-injury. This critical care center, which was established in 2006, is characterized by frequent requests for transfer from other medical institutions for severe trauma and severe acute diseases that require advanced diagnostic treatment. All patients who are admitted to that ICU due to a deliberate self-injury are evaluated using a uniform format, which includes information such as age, sex, psychiatric diagnosis, means of self-injury, alcohol consumption prior to self-injury, social factors, psychiatric visit history, psychiatric hospitalization history, history of self-injury, presence of cohabitation, history of physical illness, and physical complications. Variables were extracted from this format. In this study, all of the patients with self-injury were subjected to the analysis, with the exception of self-injuries by drug poisoning alone; such cases were excluded. The subjects were restricted to those with adjustment disorder, major depressive disorder, or schizophrenia. Two psychiatrists with >5 years' experience diagnosed all patients based on the International Classification of Diseases, 10th Revision. Patients with missing data were excluded from the final analysis. The protocol for this research project was approved by the Ethics Committee of the Tokyo Medical and Dental University Medical Hospital (approval no. 1604) and conforms to the provisions of the Declaration of Helsinki.

Variables. The outcome variable was the use of alcohol or psychotropic medications prescribed by a physician prior to self-injury. With regard to the use of psychotropic medications, we determined whether one

or more prescription drugs had been consumed in excess of the prescribed amount before the patient's self-injury. This process was judged by psychiatrists using interviews, medical information provided by the hospital, and a medical records notebook brought by the patient. Over-the-counter drugs and drugs purchased by the patients were excluded. The major explanatory variable was the psychiatric diagnosis. We compared adjustment disorder and major depressive disorder to the reference disease, schizophrenia.

Statistical analyses. We first obtained the frequency distributions of the patients' demographic and clinical characteristics and then estimated the odds ratio (OR) and the 95% confidence interval (95%CI) for alcohol or prescribed psychotropic medication use prior to the suicidal self-injury by performing a logistic regression analysis. Sex, age, and suicidal ideation were used as covariates in the model, based on clinical judgment. SPSS for Windows ver. 23 was used for the statistical analyses.

Results

The patients' characteristics. The patients are described in Table 1. Among the 971 patients who committed self-injury and were brought to the ICU, 181 had adjustment disorder, major depressive disorder, or schizophrenia.

Of these 181 patients, 175 in whom no variables necessary for analysis were missing were subjected to the analysis. Table 1 shows the frequencies of demographic and clinical characteristics. The patients were 89 (50.9%) men and 86 (49.1%) females, and 123 (70.3%) patients were in their 50s. Major depressive disorder was most frequent and was diagnosed in 90 (51.4%) patients. This was followed by adjustment disorder in 48 (27.4%) patients and schizophrenia in 37 (21.1%) patients. The most frequent means of suicidal self-injury was self-cutting (60 individuals, 34.3%). This was followed by jumping from a height (27 individuals, 15.4%) and the use of charcoal briquettes for carbon monoxide poisoning (27 individuals, 15.4%).

Risk factors for alcohol consumption or excessive use of psychotropic medication. The results of the logistic regression analysis shown in Table 2 demonstrated that the patients with adjustment disorder more commonly showed alcohol consumption or excessive use of psychotropic medication prior to their suicidal

Table 1 Characteristics of the study participants (N = 175)

	Adjustment disorder (n = 48)		Depressive disorder (n = 90)		Schizophrenia (n = 37)	
	n	(%)	n	(%)	n	(%)
Sex						
Men	25	(52.1)	46	(51.1)	18	(48.6)
Women	23	(47.9)	44	(48.9)	19	(51.4)
Age						
10–19	2	(4.2)	2	(2.2)	2	(5.4)
20–29	12	(25.0)	24	(26.7)	8	(21.6)
30–39	11	(22.9)	16	(17.8)	8	(21.6)
40–49	10	(20.8)	17	(18.9)	11	(29.7)
50–59	7	(14.6)	12	(13.3)	3	(8.1)
60–69	3	(6.3)	10	(11.1)	4	(10.8)
70–	3	(6.3)	9	(10.0)	13	(35.1)
Suicide method						
Self-cutting	21	(43.8)	29	(32.2)	10	(27.0)
Jumping	4	(8.3)	10	(11.1)	13	(35.1)
Use of charcoal briquettes	6	(12.5)	19	(21.1)	2	(5.4)
Chemical poisoning	7	(14.6)	13	(14.4)	3	(8.1)
Hanging	3	(6.3)	10	(11.1)	1	(2.7)
Drowning	2	(4.2)	4	(4.4)	3	(8.1)
Traffic	3	(6.3)	1	(1.1)	3	(8.1)
Inhaling carbon monoxide	1	(2.1)	2	(2.2)	1	(2.7)
other	1	(2.1)	2	(2.2)	1	(2.7)
Alcohol/psychotropic medications use prior to self-injury						
Without	13	(37.5)	46	(51.1)	30	(81.1)
With	30	(62.5)	44	(48.9)	7	(18.9)

Table 2 Risk factors for alcohol consumption or excessive use of psychotropic medication

Characteristics	n	%	Odds ratio (95% confidence interval)	p
Diagnostics				
Adjustment disorder	48	62.5	8.10 (2.97 to 24.60)	< .01*
Major depressive disorder	90	48.9	4.87 (1.95 to 13.66)	< .01*
Schizophrenia	37	18.9	ref	
Sex				
Men	89	41.6	ref	
Women	86	51.2	1.50 (0.79 to 2.89)	.22
Age				
≥ 50 years	52	34.6	ref	
< 50 years	123	51.2	2.17 (1.06 to 4.56)	.04*
suicidal ideation				
With	131	45.0	ref	
Without	25	48.0	1.23 (0.46 to 3.40)	.68
Unclear	19	52.6	1.16 (0.41 to 3.31)	.77

Note. * $p < .05$.

self-injuries compared to the patients with schizophrenia (OR: 8.10, 95%CI: 2.97-24.60). In addition, the patients with major depressive disorder were found to

consume alcohol or excessive psychotropic medication prior to their suicidal self-injuries more frequently than the patients with schizophrenia (OR: 4.87, 95%CI:

1.95-13.66). Comparing the patients with adjustment disorders and those with major depressive disorder, the former were more likely to have consumed excessive alcohol or psychotropic medication prior to their suicidal self-injuries.

Discussion

We evaluated patients admitted to an ICU for suicidal self-injury to compare the use of alcohol or psychotropic medications prescribed by physicians prior to self-injury in patients with adjustment disorder or major depressive disorder and patients with schizophrenia. The results of our analyses revealed that the odds ratio of a suicidal self-injury after alcohol consumption or excessive use of psychotropic medication was higher in the patients with adjustment disorder or major depressive disorder compared to those with schizophrenia. These findings are consistent with those of a report describing a lower frequency for the use of alcohol or drugs prior to suicide attempts in patients with schizophrenic spectrum disorder compared to patients with mood disorder [8].

It has been speculated that patients with adjustment disorders (such as depression) consume alcohol and/or drugs in order to confess their fear of committing a suicidal self-injury, and it has been suspected that patients with adjustment disorder or major depressive disorder may commit self-injury that requires hospital admission because of an enhanced impulse due to inebriation by alcohol or drugs. Individuals with adjustment disorder in particular are considered to be more likely than those with major depressive disorder to commit a suicidal self-injury.

This study has several limitations. A misclassification of patients may have occurred because of self-reported or family information about the use of alcohol and prescription drugs before self-injury. Although the validity of the diagnosis was verified by examination and conference by psychiatrists with >5 years' clinical experience in psychiatry, no structured interview was performed. In addition, the evaluations were based on short-term observations in the ICU. In addition, the types and amounts of the psychotropic medications and the alcohol concentration in blood samples were not investigated. We plan to examine these details in a future study.

In conclusion, the results of this study show that

alcohol consumption or excessive use of psychotropic medication prior to suicidal self-injury was more frequent in patients with adjustment disorder than in patients with schizophrenia. Assertive case management significantly reduced the incidence of recurrent suicidal behavior, albeit for a short time [9]. Therefore, to inhibit suicide attempts by lethal methods among patients with adjustment disorder, it is important to continue efforts to listen to patients about their alcohol use and to provide psychoeducation, and to instruct the patients to take their prescribed psychotropic medications only as directed by the prescribing physician.

Acknowledgments. We thank the department psychiatrists who evaluated and treated the patients and the emergency/ICU staff who provided the patients' information.

References

1. Bedford D, O'Farrell A and Howell F: Blood alcohol levels in persons who died from accidents and suicide. *Ir Med J* (2006) 99: 80-83.
2. Cherpitel CJ, Borges GL and Wilcox HC: Acute alcohol use and suicidal behavior: a review of the literature. *Alcohol Clin Exp Res* (2004) 28(5 suppl): 18S-28S.
3. Darvishi N, Farhadi M, Haghtalab T and Poorolajal J: Alcohol-related risk of suicidal ideation, suicide attempt, and completed suicide: a meta-analysis. *PLoS ONE* (2015) 10: e0126870.
4. Kaplan MS, Huguet N, McFarland BH, Caetano R, Conner KR, Giesbrecht N and Nolte KB: Use of alcohol before suicide in the United States. *Ann Epidemiol* (2014) 24: 588-592. e1-2.
5. Shin HI, Lin MC, Lin CC, Hsu HC, Lee HL, Chi CH, Sung FC, Chang YJ and Kao CH: Benzodiazepine therapy in psychiatric outpatients is associated with deliberate self-poisoning events at emergency departments-a population-based nested case-control study. *Psychopharmacology* (2013) 229: 665-671.
6. Nakagawa M, Kawanishi C, Yamada T, Sugiura K, Iwamoto Y, Sato R, Morita S, Odawara T and Hirayasu Y: Comparison of characteristics of suicide attempters with schizophrenia spectrum disorders and those with mood disorders in Japan. *Psychiatry Res* (2011) 188: 78-82.
7. Nakagawa M, Kawanishi C, Yamada T, Iwamoto Y, Sato R, Hasegawa H, Morita S, Odawara T and Hirayasu Y: Characteristics of suicide attempters with family history of suicide attempt: a retrospective chart review. *BMC Psychiatry* (2009) doi: 10.1186/1471-244X-9-32.
8. Grimholt TK, Jacobsen D, Haavet OR and Ekeberg O: Lower suicide intention in patients with personality disorders admitted for deliberate self-poisoning than in patients with other diagnoses. *Ann Gen Psychiatry* (2017) doi: 10.1186/s12991-017-0145-3.
9. Kawanishi C, Aruga T, Ishizuka N, Yonemoto N, Otsuka K, Kamijo Y, Okubo Y, Ikeshita K, Sakai A, Miyaoka H, Hitomi Y, Iwakuma A, Kinoshita T, Akiyoshi J, Horikawa N, Hirotsune H, Eto N, Iwata N, Kohno M, Iwanami A, Mimura M, Asada T and Hirayasu Y, ACTION-J Group: Assertive case management versus enhanced usual care for people with mental health problems who had attempted suicide and were admitted to hospital emergency departments in Japan (ACTION-J): a multicenter, randomized controlled trial. *Lancet Psychiatry* (2014) 1: 193-201.