Impact of COVID-19-related stress on methamphetamine users in Japan

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Studies worldwide have observed that COVID-19 pandemic-related stress (such as the various constraints of everyday life, and anxiety) promotes the use of drugs as a coping behavior.1–4 Access to alternative maintenance medication of patients with opioid addiction has been reported to have been restricted, resulting in aggravation of their medical conditions5; perhaps relatedly, opioid-overdose deaths have increased.6 In Japan, however, the current situation is unknown. We therefore sought to investigate the negative impact of COVID-19 on drug users who take methamphetamine (MAP), which is one of the most abused drugs in Japan.

Biennially, we conduct national surveys of patients with drug-related psychiatric disorders who were admitted to or received outpatient treatment at psychiatric hospitals throughout Japan between September and October of that year. Information is collected via survey forms mailed to each target hospital, where the attending psychiatrist enters clinical information into the form by transcribing medical records and by conducting interviews. Survey items include demographic variables, education, work status, criminal record, presence/absence of problem drinking, duration of therapy, recovery program (group therapy or self-help group) participation status, mainly used drug, and ICD-10 diagnoses. The 2020 survey added two items: COVID-19-related relapse (aggravation of substance abuse due to COVID-19-related stress, which was clinically determined by each attending psychiatrist), and COVID-19-related inhibition of recovery program participation (group therapy and self-help groups having been temporarily suspended as social distance cannot be ensured in such settings). This study was conducted after approval by the ethics committee of the National Center of Neurology and Psychiatry, and it is conformed to the provisions of the Declaration of Helsinki. The attending psychiatrist gave informed consent, and patient anonymity has been preserved.

In the 2020 survey, 1217 (78.1%) of 1558 target hospitals nationwide provided data on 2733 patients with drug-related psychiatric disorders (95.6% of 2859 patients consented this survey); of these, the 1461 patients (1076 men, 385 women) who used MAP as a main drug were the subjects of the present study, and 407 patients (27.9%) had used MAP within the past year while the rest (72.1%) had maintained no use of MAP by continuing treatment.

Of the subjects, the 85 patients (5.8%) were considered to have a COVID-19-related relapse. Table 1 shows the results of a logistic regression analysis conducted by setting COVID-19-related relapse as the

| Table 1. Comparison by presence/absence of COVID-19-related worsening of drug usage in 1461 cases with methamphetamine-related disorders |
|---------------------------------------------------------------------------------------------------------------|
| **COVID-19-related relapse** | **Multivariate analysis** |
| | N=85 | N=1376 | B | Wald | P | Odds ratio | 95% CI |
| Biological gender (percentage of men) | Frequency: 70 | 1006 | 0.708 | 4.316 | **0.038** | 2.031 | 1.041 | 3.962 |
| Age (percentage of subjects ≥40 years old) | Frequency: 55 | 1028 | -0.166 | 0.379 | 0.538 | 0.847 | 0.500 | 1.436 |
| Schooling history of ≥12 years | Frequency: 50 | 447 | 0.438 | 2.594 | 0.410 | 1.549 | 0.909 | 2.639 |
| Current employment | Frequency: 31 | 365 | -0.087 | 0.103 | 0.748 | 0.917 | 0.540 | 1.557 |
| Custody/arrest record due to drug-related crimes | Frequency: 63 | 1042 | -0.242 | 0.585 | 0.444 | 0.485 | 0.422 | 1.460 |
| Custody/arrest record due to criminal offenses other than drug-related crimes | Frequency: 17 | 338 | -0.377 | 1.246 | 0.264 | 0.686 | 0.353 | 1.330 |
| History of admission to a correctional institution | Frequency: 31 | 772 | -0.440 | 2.108 | 0.147 | 0.644 | 0.356 | 1.166 |
| Current problem drinking | Frequency: 19 | 207 | 0.765 | 6.314 | **0.012** | 2.150 | 1.001 | 3.905 |
| History of admission to a psychiatric hospital | Frequency: 37 | 847 | -0.224 | 0.637 | 0.425 | 0.799 | 0.461 | 1.386 |
| Duration of therapy ≥1 year | Frequency: 59 | 1184 | -0.877 | 7.860 | **0.005** | 0.416 | 0.225 | 0.768 |
| Participated in a recovery program within the last month | Frequency: 48 | 457 | 0.001 | 0.000 | 0.997 | 1.001 | 0.583 | 1.719 |
dependent variable and the survey terms as independent variables. Male sex \( (P = 0.038, \text{OR } 2.031, 95\%\text{CI } 1.041–3.962) \), current problem drinking \( (P = 0.012, \text{OR } 2.150, 95\%\text{CI } 1.183–3.905) \), COVID-19-related inhibition of recovery program participation \( (P < 0.001, \text{OR } 5.866, 95\%\text{CI } 3.271–10.520) \), Dependence Syndrome \( (P < 0.001, \text{OR } 7.603, 95\%\text{CI } 2.569–22.501) \), and coexisting Childhood/Adolescence-onset Behavioral and Emotional Disorders (CABED) \( (P = 0.014, \text{OR } 2.604, 95\%\text{CI } 1.213–5.589) \) were identified as being significantly positively associated with COVID-19-related relapse. Duration of therapy \( \geq 1 \text{ year} \) \( (P = 0.005, \text{OR } 0.416, 95\%\text{CI } 0.225–0.768) \) was identified as being significantly negatively associated with relapse.

The results of this study indicate that, for MAP-dependent patients who recently started their treatment, and therefore, who might not have achieved abstinence yet, the COVID-related barriers to participation in group therapy and self-help groups may increase risk of relapse. Our study also suggests that alcohol use (possibly also to cope with COVID-19-related stress)

Table 1. (Continued)

| ICD-10 F1 classification subdiagnosis | Frequency | % | Frequency | % | Frequency | % | Frequency | % |
|---------------------------------------|-----------|---|-----------|---|-----------|---|-----------|---|
| COVID-19-related inhibition of participation | 48 | 56.5 | 457 | 33.2 | 1.769 | 35.243 | <0.001 | 5.866 | 3.271 | 10.520 |
| F1x. 2 Dependence syndrome | 81 | 95.3 | 797 | 57.9 | 2.029 | 13.429 | <0.001 | 7.603 | 2.569 | 22.501 |
| F1x. 5 Psychotic disorder | 10 | 11.8 | 200 | 14.5 | 0.137 | 0.118 | 0.731 | 1.147 | 0.525 | 2.506 |
| F1x. 7 Residual and late-onset psychotic disorder | 10 | 11.8 | 610 | 44.3 | -0.410 | 1.081 | 0.299 | 0.663 | 0.306 | 1.438 |
| Comorbid psychiatric disorder | 0 | 0.0 | 39 | 2.8 | -17.231 | 0.000 | 0.998 | 0.000 | – | – |
| F2 Schizophrenia, schizotypal and delusional disorders | 6 | 7.1 | 154 | 11.2 | -0.150 | 0.100 | 0.752 | 0.860 | 0.338 | 2.188 |
| F3 Mood (affective) disorders | 17 | 20.0 | 178 | 12.9 | 0.341 | 1.072 | 0.301 | 1.406 | 0.737 | 2.682 |
| F4 Neurotic, stress-related and somatoform disorders | 12 | 14.1 | 154 | 11.2 | -0.002 | 0.000 | 0.301 | 0.998 | 0.485 | 2.054 |
| F5 Mental disorders associated with physiological disturbances and physical factors | 2 | 2.4 | 22 | 1.6 | 1.100 | 1.854 | 0.173 | 3.004 | 0.617 | 14.632 |
| F6 Disorders of adult personality and behavior | 9 | 10.6 | 82 | 6.0 | 0.750 | 3.046 | 0.081 | 2.116 | 0.912 | 4.911 |
| F7 Intellectual disabilities (mental retardation) | 1 | 1.6 | 60 | 4.4 | -1.037 | 0.892 | 0.345 | 0.355 | 0.041 | 3.048 |
| F8 Disorders of psychological development | 2 | 2.4 | 36 | 2.6 | -0.419 | 0.265 | 0.607 | 0.658 | 0.134 | 3.048 |
| F9 Behavioral and emotional disorders with onset usually occurring in childhood and adolescence | 12 | 14.1 | 53 | 3.9 | 0.957 | 6.027 | 0.014 | 2.604 | 1.213 | 5.589 |
may increase the relapse risk in male MAP users. Furthermore, a ‘stay-at-home’ lifestyle is speculated to be stressful to promote relapse in those who suffer from attention-deficit/hyperactive disorder (ADHD), the most common CABED.

These findings may indicate the significance of continuing to implement group therapy and holding self-help groups under this pandemic, while considering social distance to prevent the spread of infection. This study also suggests that people with drug addictions should be wary when adapting to new ‘self-restraint’ and ‘stay home’ lifestyles during a pandemic, to deal with alcohol, the socially accepted substance, and how to reconcile their ADHD, which may be a vulnerable factor for such lifestyle.

This study was conducted in MAP users who had access to a psychiatric hospital. Therefore, there are limitations regarding whether our findings can be generalized to all MAP users. Another limitation is that all study information, including whether the relapse was COVID-19-related, was determined solely by each participating hospital’s attending psychiatrist. Moreover, the economic impact of the special fixed-amount benefits (such unexpected income may ironically fund the purchase of MAP promoting relapse), and whether online group therapy and self-help groups are as effective as in-person gatherings were not considered.

Despite these limitations, this is the only Japanese study to date to investigate the impact of COVID-19 on MAP users; therefore this study not only has clinical implications, but is also important with regard to public health.

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Electroconvulsive therapy in a catatonic patient with subdural hematoma

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Intracranial space-occupying lesions and increased intracranial pressure (ICP) are relative contraindications of electroconvulsive therapy (ECT). At present, there is limited literature on the safety of ECT in patients with subdural hematoma (SDH). Sporadic reports suggest ECT can be safely used in depressed patients with SDH.1–3 There are also reports of patients developing SDH after ECT.4,5 We describe a case where ECT was used to treat catatonia after recent SDH.

The patient is a 37-year-old male with schizophrenia diagnosed at age 15. He had been well on clozapine 200 mg/day the past 18 years. There is a history of primary B cell mediastinal lymphoma, in full remission. He was functionally independent and gainfully employed. He presented with hyper-religiosity and paranoid delusions, and was treated as an inpatient for relapse of schizophrenia. One day after clozapine was increased to 250 mg/day, he developed neuroleptic malignant syndrome (NMS) evidenced by acute confusion, fever of 39.4°C and raised Creatine Kinase (CK >20 000 U/L). CT brain showed no abnormalities (Fig. 1a). After clozapine was stopped and supportive treatment rendered, his fever resolved and CK levels improved.

Ten days later, a repeat CT brain to investigate new-onset drowsiness showed bilateral SDH over the left frontotemporal and right frontoparietal convexity, measuring 10 mm in maximum width and extending along the falx regions bilaterally (Fig. 1b). There was associated mild mass effect and 2 mm rightward midline shift. The etiology of SDH remains uncertain – there was no witnessed fall or signs of head injury. Neurosurgery was consulted and he was managed conservatively.

A third CT brain a week later, to investigate a first-episode generalized tonic–clonic seizure, did not show progression of SDH. Valproate 700 mg/day was started for seizure prophylaxis. Post-seizure, he spiked a fever of 38.9°C and was treated for hospital-acquired pneumonia. Concurrently, he developed catatonic symptoms such as stupor, mutism, immobility and negativism. A fourth CT brain (Fig. 1c) showed acute on chronic SDH on the left frontotemporal convexity while the right SDH remained stable.

The etiology of his catatonia is unclear, but most likely the result of concurrent neurological (SDH, seizure) and systemic (NMS, sepsis) medical issues in the context of ongoing and untreated schizophrenia relapse.

Oral lorazepam was initiated and increased to 16 mg/day. Despite high dose lorazepam for a week, his catatonia did not respond. Given the risks of prolonged immobility, such as pulmonary embolism and recurrent hospital-acquired infections, we decided to proceed with ECT cautiously after considering the risks and benefits in consultation with the neurosurgeon and anesthetist.

Because the patient lacked mental capacity to give consent, ECT was administered under the legal framework of the Mental Capacity Act (Singapore)6 in accordance with best interest principle and in consultation with his family.

Seven sessions of ECT (Table S1) were administered over 3 weeks, using bifrontal electrode placement and age-based dosing. Treatment progress was uneventful, with satisfactory seizure quality in all seven sessions. The catatonic symptoms responded after four ECT sessions and resolved completely by the final session.