The Intravenous Diazepam Interview for Motor Paralysis Cases Influenced by Psychiatric Disorder

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Background: Motor rehabilitation may be rarely disrupted by psychiatric disorders including conversion disorder and catatonia. The amobarbital or diazepam interview can be implemented for both the diagnosis and treatment of these disorders. We report two typical cases presenting with motor paralysis influenced by psychiatric disorder that were effectively diagnosed and treated using the diazepam interview in convalescent rehabilitation.

Cases: Case 1 was a 32-year-old man. He experienced severe paralysis and sensory disturbance of the right arm and leg while at work, and then received conservative treatment for stroke. One month later, after the diazepam interview, he rapidly recovered almost entirely from his paralysis and sensory disturbance, which led to a diagnosis of conversion disorder. Case 2 was a 42-year-old man. After becoming an alcoholic, both legs had gradually become severely paralyzed. Two months later, he was uncommunicative and refused rehabilitation and nursing care. He briefly became communicative during the diazepam interview, and was diagnosed with delusional depressed state with stupor. Six months later, both legs remained spastic and paralyzed. Although he was subacute with combined degeneration of the spinal cord, taking conversion disorder overlap into consideration, we conducted the diazepam interview again; he immediately recovered slight voluntary extension and flexion of both legs.

Conclusions: We describe two motor disturbance cases influenced by psychiatric disorders. For both patients, the diazepam interview was shown to be an effective method for the diagnosis and treatment of a psychiatric disorder. Our findings suggest that the diazepam interview could be appropriate for use in the rehabilitation area when conducted correctly.

Key words: intravenous diazepam interview (diazepam interview), motor paralysis, psychiatric symptoms, conversion disorder

Introduction

In our clinical experience, recovery during rehabilitation of motor disturbance, including that associated primarily with cerebrovascular or motor system diseases, can be delayed by the presence of psychiatric symptoms. We may, albeit rarely, experience conversion disorder or catatonia in psychiatric disorders thus bringing motor disturbance directly into rehabilitation settings. Although conversion disorder has previously been defined as hysteria, the stigma associated with this term means that it is now simply termed conversion disorder, and it is

classified according to the DSM-5¹⁾ using the same term. Conversion disorder is defined as loss or alteration in motor or sensory function that appears to arise from psychological issues. While various different factors have been used to describe the etiology of conversion disorder, including personality, biological, and psychological factors, a clear conclusion has not been reached. However, the psychoanalytic theory describes conversion symptoms as compromise formations with the primary gain of conflict resolution through partial expression of the conflict without conscious awareness of its significance^{2) 3)}. Catatonia is another unique

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neuropsychiatric syndrome associated with altered consciousness and psychomotor disturbances, such as stupor, motor immobility, and mutism^{4) 5)}.

One well-known treatment for psychiatric symptoms, such as conversion symptoms or catatonia, is the intravenous administration of the amobarbital interview, which has been utilized for both the diagnosis and treatment of psychiatric disorders in Western countries^{6)–9)}. The amobarbital interview is a psychotherapeutic interview with a psychiatric patient after intravenous amobarbital administration. However, in Japan, amobarbital production was canceled and is no longer used today. Diazepam has thus been used as a substitute for amobarbital in clinical Japanese psychiatry; however, the term ‘diazepam interview’ has not been a recognized term until recently. The treatment of catatonia with benzodiazepines, including diazepam, has gradually become more mainstream^{5) 6)}.

Here, we report two typical cases of motor paralysis influenced by psychiatric disorders who were effectively diagnosed and treated by intravenous administration of diazepam. This case study therefore revealed that the diazepam interview is useful for diagnosis and treatment of psychiatric symptoms such as conversion symptoms and psychotic stupor.

Case reports

Case 1

The patient was a 32-year-old man who had worked in construction from the age of 15 years old. His parents had divorced when he was a child, after which he had lived with his father, his younger brother, who suffered from mental retardation, and his uncle until adulthood. The patient was living with his wife, his parents-in-law, and his four children at the time of hospitalization. His father-in-law had a serious disease, which placed a burden on him and his wife.

The patient had been an excessive drinker for several years. He had experienced headaches several months before hospitalization. While at work, the patient experienced right arm and leg weakness with no apparent cause. He was admitted to the Department of Neurosurgery of the A Hospital with right arm and leg paralysis, and received conservative treatment including oral antiplatelet drug administration and rehabilitation for stroke. He was not able to receive a brain MRI due to having a tattoo. However, a brain CT scan

revealed hypoplasia of the right vertebral artery and no area with abnormal density. One month later, he was transferred to the convalescent rehabilitation department of our hospital for post-stroke paralysis.

Examinations revealed a severe flaccid paralysis and severe sensory disturbance of the right arm and leg. Despite the seriousness of the situation, the patient seemed to be unemotional about his paralysis when he was first hospitalized in our convalescent department. Meanwhile he was sensitive, agitated, and made excessive demands. When asked what was troubling him in his life before this disease, he claimed that everything had been fine. However, considering that his conversion symptoms overlapped, we conducted the diazepam interview 5 days after hospitalization.

After explaining the procedure and goals of the intravenous diazepam interview, the patient provided informed consent. The patient received a slow intravenous infusion of 10 mg diazepam/100 ml saline until he felt relaxed and drowsy. After this, the patient was ordered to bend and extend his paralyzed hands, foot, leg, and arm in turn; he showed slight voluntary flexion and extension of the fingers, foot, leg, and arm. Over the next several days, he gradually recovered almost completely from his paralysis. From that point on, the patient repeatedly made various demands, such as going to the smoking area or to the hospital kiosk, leaving the hospital, and staying out. During a trip out, he and his wife had a quarrel. He returned home unexpectedly 14 days after the initial hospitalization. After a few days later, he confessed that he had been in bad relationship with his wife for a long time, and eventually discontinued follow-up.

Case 2

The patient was a 42-year-old man. He lived with his wife in the house that he had inherited from his parents, who were both deceased, and he was estranged from his older brother. Since being made unemployed 6 years before (he had an arrhythmia that made it unsuitable for him to work), he had become a heavy drinker. Over time, both his legs had become severely paralyzed; he could not walk 2 months before admission to the internal medicine of our hospital in July, 201X. When first admitted to hospital in July, he was malnourished, had hyponatremia and hypokalemia, and was bedridden; he

was therefore administered a supplementary vitamin liquid supplement. The vitamins in his blood were normalized because of the supplements. The patient was prescribed with 5 mg diazepam before sleeping for sleeplessness. The patient had severe bilateral spastic paralysis and mild to moderate sensory disturbances of the legs. He was clearly in agony, was muttering to himself, and was uncommunicative. A brain MRI revealed slight atrophy of the frontotemporal lobe and cerebellum, and no area of abnormal intensity. A spinal cord MRI revealed a slight T2 hyperintensity along both lateral and posterior columns of T9 to T11, which is characteristic of subacute combined degeneration of the spinal cord.

When he moved to our convalescent rehabilitation ward in September, he was mute but sometimes talked to himself, and had delusions of reference of “everybody speaking ill” of him, and hypochondriacal delusions of “getting AIDS”. Therefore, we prescribed risperidone 0.5 mg/day. Despite this, he continued to experience mutism, refused to eat, and rejected the rehabilitation and nursing care. Schizophrenia or alcoholic psychosis were considered as possible diagnoses. To obtain a diagnosis decision, at the beginning of September we performed the diazepam interview using an intravenous injection of 10 mg diazepam.

During the interview, he became temporarily communicative and said, “It was bad to have not told anyone that I have AIDS. I want to die and be at peace”. The patient exhibited a depressed mood with pessimistic, nihilistic, and negative feelings. Therefore, we confirmed delusional depressed state with stupor, and prescribed sulpiride (150 mg/day maximum) and diazepam (4 mg/day) together. In December, he became stable as his psychotic symptoms gradually disappeared. However, there had been no improvements in the patient’s spastic paralysis of both legs by March, 201X + 1. He said, “I want to stay bedridden and can’t undergo rehabilitation”. Because of his evasion of reality, and taking conversion disorder overlap into consideration, we conducted the diazepam interview with 10 mg diazepam administered intravenously twice, at the beginning and the end of March. During the first administration, the patient showed slight voluntary extension of both hip joints and knees. Then, he reported being delighted and said he could move his legs. During the second administration, he showed

slight voluntary flexion and extension of both hip joints, knees, and ankles. Thereafter, he became able to slide himself and stand in bed unassisted. After his economic problems had been settled by disposal of his property and welfare acquisitions, he entered a nursing facility in August, 201X + 1.

Discussion

We have reported two cases of motor paralysis influenced by conversion disorder and psychotic stupor that were effectively diagnosed and treated by the diazepam interview. Case 1 presented with severe paralysis and sensory disturbance of the right arm and leg. The diazepam interview was conducted as a method for diagnosis and treatment of conversion symptoms following inconclusive brain imaging results. After the interview trial, the patient’s paralysis and sensory disturbance rapidly improved. Therefore, we confirmed his physical symptoms were conversion symptoms. It is possible that his conversion symptoms were caused by the psychological conflict of his family situation. Swartz *et al.* suggested that clinicians should be careful of using interventions such as the amobarbital interview for treating conflicts that generate the conversion symptoms if conversion symptoms are chronic or linked to a pathological family system¹⁰⁾. When conversion symptoms had disappeared after the diazepam interview, the relationship with his wife became worse. Because marital or familial conflict may have caused his motor symptoms, we should have fully explained his disease to his wife and more carefully approached his family problems. Case 2 resisted rehabilitation and care as a result of psychotic stupor and conversion symptoms overlapped with subacute combined degeneration of the spinal cord. After the first diazepam interview, his stupor was temporarily relieved and we were able to more freely communicate with the patient; we confirmed a psychiatric diagnosis of delusional depressed state with stupor. Despite the severe spastic motor paralysis by his subacute combined degeneration of the spinal cord, his exaggerated and reality evasion-like manner led us to doubt that his leg paralysis was influenced by conversion disorder; we therefore conducted a second diazepam interview. From the two interview trials, a slight voluntary flexion and extension of lower legs was observed in a stepwise fashion. Afterwards, there

was progress in his activities of daily living, such as sliding himself and standing. His anxiety concerning money problems and social adaptation difficulties may have caused his motor symptoms. Another psychological mechanism may have been an alcoholic-related psychiatric disorder, such as a psychotic depressive state, which may have influenced his mental state and resulted in motor problems. The benefits of psychosocial intervention and rehabilitation programs for conversion disorder have not yet been fully established¹¹⁾; however, when considering that his symptoms gradually improved during the continued rehabilitation and he was relieved by economical environmental adjustment, this might indicate that participation in some kind of psychosocial intervention and rehabilitation may have been beneficial.

The two cases had no suspected malingering or factitious disorders because there was a lack of symptoms, and they also showed no complications such as respiratory suppression and cardiovascular complications during the diazepam interview.

Our psychiatric diagnoses, which were made according to the operational diagnosis DSM-5¹⁾ criteria, were conversion disorder in Case 1, and an overlap of alcohol-related disorders (alcohol-induced psychotic disorders, depressive disorders, delirium) and conversion disorder in Case 2. As a conventional diagnosis, Case 2 could be regarded as symptomatic psychosis having some psychiatric symptoms of Wernicke-Korsakoff syndrome¹²⁾. The psychiatric symptoms and course would, to some extent, be comparable to that of Wieck's transient syndrome¹²⁾ when considered from a different viewpoint. In addition, over time, Case 2 partially satisfied the symptoms required for a diagnosis of catatonia, such as stupor, mutism, and negativism. Because catatonia is a motor dysregulation syndrome that emerges in many general medical and neurological disorders^{4) 5)}, another interpretation of his psychiatric symptoms could have been catatonia.

As seen in the present cases, we propose that the important psychiatric disorders directly influencing motor disturbances are conversion disorder and catatonia. Therefore, rehabilitation may be appropriate for treating motor disturbances in the presence of psychiatric disorders such as conversion disorder or catatonia that complicate motor disturbances. Although we believe that the diagno-

sis and treatment of our two cases were effectively made using the diazepam interview, the best-known treatment remains the amobarbital interview, which has been used in the diagnosis and treatment of a variety of psychiatric disorders in Western countries⁶⁾⁻⁹⁾. Next, we will briefly describe the history behind both the amobarbital interview and the diazepam interview.

The amobarbital interview was introduced by Bleckwenn in 1930 as a technique for treating patients with catatonia. Since then, it has been used as a diagnostic and therapeutic tool for many psychiatric patients in Western countries. In 1938, Herman reported using amobarbital for memory recovery in patients with psychogenic amnesic states. Thereafter, drug-assisted memory recovery was applied to casualties of war and accident victims. In the early 1980s, the amobarbital interview had a valid role in the assessment and initial management of various psychiatric problems, including functional recovery in conversion disorders in psychiatric emergency settings and military settings^{9) 13)}. However, other authors have questioned the usefulness of the amobarbital interview, and its popularity has declined⁶⁾. However, recent neurorehabilitation research has stated that clinicians should be familiar with the amobarbital interview and its potential role in both the assessment and treatment of a number of clinical conditions⁸⁾. In Japan, its production was canceled because of a problem in the production as an intravenous injection agent of amobarbital in 2001; accordingly, we cannot use it today. In India, conversion disorder was very common in the 1980s, yet the supply of intravenous amobarbital was restricted because of difficulties in obtaining an export license from the United States. Thus, intravenous diazepam abreaction interviews in substitution for amobarbital have generally been used effectively for numerous cases of conversion disorder¹⁴⁾⁻¹⁶⁾. Furthermore, following the redefinition of catatonia by Fink and Taylor, use of intravenous benzodiazepine, including diazepam instead of amobarbital, has gained popularity as an effective therapeutic drug from the early 2000s⁴⁾⁻⁶⁾.

Intravenous amobarbital and diazepam has been used in psychiatric clinical settings in Japan as a potential sedative or anticonvulsant treatment for anxiety, alcohol withdrawal, and epileptic seizures.

According to the Japan Medical Abstracts Society, only a few reports of amobarbital or diazepam intravenous use for dissociative disorder or conversion disorder have been reported in the psychiatry and dentistry domains since around 1990. These provide few insights about the efficacy of amobarbital or diazepam. However, since the 2000s, there have been several reports about diazepam intravenous use for the treatment of catatonia. The usefulness of diazepam intravenous use for catatonia has been gradually established in Japan and worldwide^{4) 6) 8) 17) 18)}.

Both amobarbital and diazepam agonistically militate γ -aminobutyric acid (GABA), which is the major inhibitory neurotransmitter in the nervous system. In particular, diazepam acts on the GABA-benzodiazepine receptor complex to increase the affinity of GABA receptors, which increases the frequency of chloride channel openings and hyperpolarization of neurons, and consequential sedative actions¹⁸⁾. Furthermore, these interviews may have an expectancy or a suggestion effect, such as the placebo effect or hypnosis^{7) 8)}.

While intravenous diazepam has been frequently used as anti-anxiety or anti-epileptic agent by many doctors, adverse effects such as respiratory depression, cardiovascular complications, and altered mental state can occur^{19) 20)}. Diazepam should therefore be used carefully during interviews.

Consent

Written informed consent for the publication of this case report was obtained from both cases.

Conclusions

While psychiatric disorders such as conversion disorder and catatonia are often difficult to identify in diagnosis and treatment rehabilitation settings, early intervention by the diazepam interview may prevent potential chronicity. The diazepam interview is thought to be a relatively safe, rapid, and efficacious method that can be implemented to diagnose and manage psychiatric symptoms. However, in future research it will be necessary to increase the number of cases of the diazepam interview, and to examine it more in detail.

Conflict of interest

The authors declare no conflict of interest

associated with this manuscript.

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