Mental Health in Patients with SMON: Comparison with Patients with Parkinson's disease

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Received 26 February 2021; accepted 10 March 2021

Abstract

We conducted a similar psychological assessment in Parkinson's disease (PD) patients to determine whether the mental health status observed in SMON patients was disease-specific or shared by patients with other neurological disorders. The subjects were 8 of 13 patients (3 males and 5 females, mean age 81.9 ± 5.14 years) who participated in the Tokushima Prefecture SMON Screening in 2019 and 8 PD patients [3] males and 5 females, mean age 66.8 ± 10.0 years) admitted to our hospital. The method used was an 18-item version of the Sentence Completion Test (SCT) for the elderly and the Japanese version of The General Health Questionnaire (GHQ). The results of GHQ12 suggested that the mental health of SMON patients tended to be lower than that of PD patients, and the results of SCT suggested that the positive emotions of PD patients were higher than those of SMON patients. However, due to the different age groups of the two groups and the small number of subjects, further study was necessary. In the emotional expression pattern of SCT, positive emotional expression about "Family" was found in SMON patients and about "friends" in PD patients. On the other hand, in terms of the expression of negative emotions, SMON patients often expressed "about the disease" and PD patients often expressed "anxiety concerns". In summary, the difference in emotional expression by SCT between SMON and PD patients may be related to this disease.

Keywords: SMON inTokushima, Parkinson's disease, Sentence Completion Test, The General Health Questionnaire, Correlation

Introduction

In Tokushima Prefecture, psychological intervention has been implemented during SMON screening since 2017. In 2017, we surveyed the participants on whether or not they had any worries and whether or not they wanted psychological counseling. 11 of the participants had mental or psychological worries, of which 9 wanted counseling. However, there were a small number of people who did not wish to receive psychological counseling. In 2018, an interview protocol was developed for those who did not wish to seek psychological consultation, and a psychological approach was considered for all SMON patients. As a result, those who did not seek psychological consultation did not necessarily have good mental health. One possible reason for not seeking psychological consultation was that SMON patients often have cognitive impairments, vision problems, hearing loss, and other problems that make it difficult to

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conduct normal psychological testing due to aging. In 2019, psychological support was provided using SCT and GHQ12 to enable psychological approaches in natural conversations. The results suggested that SMON patients may have lower mental health than the general elderly population, and that SCT reflects the mental health of SMON patients. In 2020, we conducted the same psychological tests in PD patients and compare them with those in SMON patients to see if these results are specific to SMON patients or common to other neurological intractable disease patients.

Method

The subjects were 8 of 13 patients (3 males and 5 females, mean age 81.9 ± 5.14 years) who participated in the Tokushima Prefecture SMON Screening in 2019 and 8 PD patients (3 males and 5 females, mean age 66.8 ± 10.0 years) who were admitted to our hospital. SCT is a projective method, which is available for different age groups (elementary school, junior high school, high school/adult, and elderly). By presenting a stimulus sentence and asking the subject to complete it, it is possible to gain an overall understanding of the subject's intelligence, personality, life history, and outlook on life from their responses. We also used 18 items from the 33-item scale of the SCT for the geriatric population, modified for SMON patients, in our study. categories "Family," "Friends," "Health," "Self's Past," "Self's Present," "Self's Future," "Anxiety Concerns," and "Value," the newly created category "About Illness" was changed from "SMON" to "PD. The group with emotion was scored as positive emotion (2 points), ambivalent emotion (1 point), or negative emotion (0 points) [1], and the sum of these scores was used as the total SCT score. The SCT shows that higher scores indicate more positive emotions. The GHQ is a test method for assessing mental health, of which the GHQ12 is a simplified version with 12 items. The method was to score each item as either 0 or 1, with two choices, and the total score was the GHQ12 total score. The highest score is 12 and the lowest is 0. The higher the score, the lower the level of mental health [2]. Geriatric SCT and GHQ12 were administered individually to patients who had been explained by the psychotherapist using an explanatory form and had given their consent. Mann-Whitney test was performed for the difference in SCT scores and GHQ12 scores between SMON and PD patients. In addition, a single regression analysis was performed on the association between SCT total score and GHQ12 total score [3].

Ethical considerations

This study was conducted after approval by the Ethics Committee of the National Hospital Organization Tokushima Hospital.（Approval Number32-15）。After explaining the results using an explanation form and obtaining signatures on a consent form for those who gave consent, interviews and psychological tests were conducted.

Results

Contents of SCT for the elderly

In terms of SCT representation content, 125 SCT responses were received from SMON patients, and 19 responses were not received. Of the 105 expressions that included an emotional component, 28% (n=35) were positive, 18% (n=22) were ambivalent, and 38% (n=48) were negative. In addition, 16% (n=20) did not include an emotional component. On the other hand, there were 144 SCT responses from PD patients, of which 130 included an emotional component, of which 41% (n=59) were positive, 14% (n=21) were ambivalent, and 35% (n=50) were negative. In addition, 10% (n=14) of the respondents did not include the emotional component (Figure1). In terms of positive emotions in SCT expressions, positive expressions about "Family" were more frequent in SMON patients and about "friends" in PD patients. On the other hand,

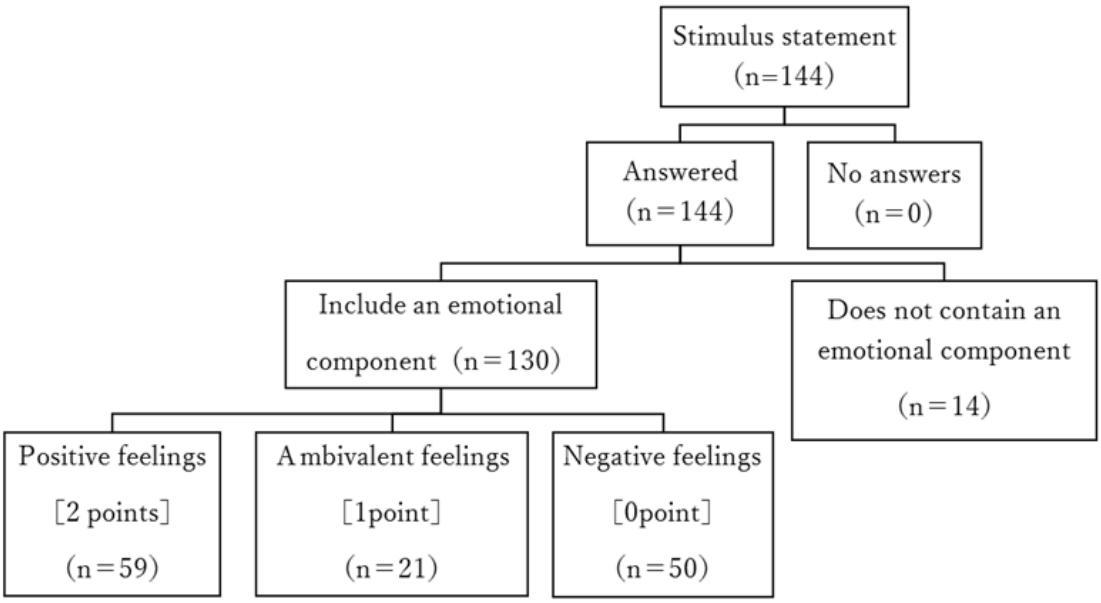

Figure 1. Results of SCT in patients with

negative emotions were often expressed in different categories, such as "about the disease" in SMON patients and "anxiety concerns" in PD patients (Figure2).

Basic statistics of SCT scores and GHQ12 scores

SCT scores for SMON patients were mean (95% CI) = 11.25 (16.5-5.96) and mean (95% CI) = 17.38 (21.4-13.4) for PD patients, with higher mean scores for PD patients, but no significant difference was found (p = 0.155). Next, the GHQ12 scores of SMON patients were mean (95%CI) = 6.25 (9.49-3.01) and PD patients were mean (95%CI) = 2.5 (4.52-0.48), with higher mean scores for SMON patients, but no significant difference was found (p = 0.062) (Table1).

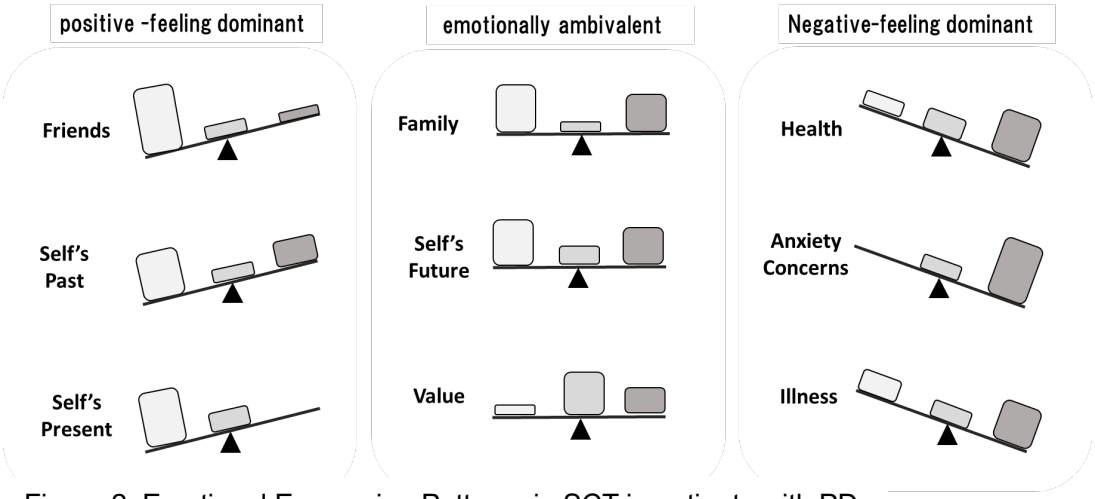

Figure 2. Emotional Expression Patterns in SCT in patients with PD

Table 1

	Parkinson's disease	*p**
SCT Average (95%CI)	17.38(21.4-13.4)	0.155
GHQ12 Average (95%CI)	2.5(4.52-0.48)	0.062

* Mann-Whitney U test

Relationship between SCT total score and GHQ12 total score

The regression coefficient from SCT scores to GHQ12 scores in SMON patients was significant at the 1% level (p=0.006), but no significant correlation was found in PD patients (p=0.143) (Figure3).

Discussion

SMON (Subacute Myelo-Optico-Neuropathy) is a central and peripheral neuropathy that occurred frequently in Japan from the 1950s to the 1970s. After quinoform, an antiflatulent drug, was identified as the cause of the disease and its sale was banned in 1970, the number of new cases decreased dramatically [4]. According to a study by Konagaya et al, the frequency of motor symptoms in 2016 was 8.0% for gait disturbance in the young-onset group, 23.0% in the adult-onset group, and 20% for inability to walk or wheelchair [5]. In 2019, psychiatric signs were present in 62.0%, anxiety/agitation was comorbid in 29.6%, psychosomatic in 13.2%, and dementia in 15.3%. The frequency of depression, a psychiatric symptom of SMON, was 18.8%, and 40.2% had an emotional crisis [6]. Currently, the average age of SMON patients is over 80 years old, and the aging of the population has become more pronounced. We conducted annual SMON examinations and were under the impression that the patient was suffering from neurological symptoms, stress from being a victim of drug damage, and age-related cognitive impairment.

PD is one of the common neurological intractable diseases caused by selective degeneration of substantia nigra dopaminergic neurons in the midbrain. In addition to the characteristic motor symptoms, PD is known to present with a variety of non-motor symptoms. Among them, depression is one of the most frequent psychiatric symptoms, with a reported complication rate of 40-50% [7]. It also includes apathy, which is a state of impaired motivation to do anything, and anhedonia [8], which is a state of loss of joy and fun. Anxiety disorders are associated in 25.0-43.0% [9]. These findings suggest that PD patients are subjected to a variety of psychological stresses, which may impair their daily activities. We have conducted an assessment of mental health status through a psychological approach to patients with SMON. In 2020, we examined whether the mental states specifically observed in patients with SMON are also common in patients with other neurological intractable diseases.

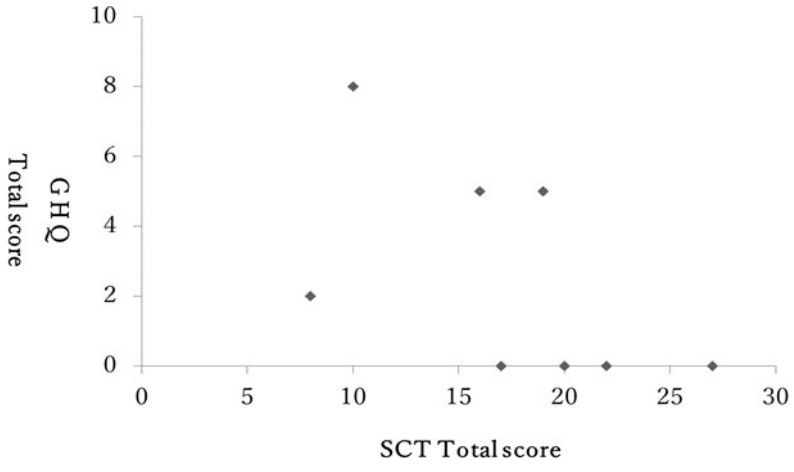

Figure 3. Relationship between SCT total score and GHQ12 total score in patients with PD

For this reason, we focused on PD, one of the common neurological intractable diseases, and conducted the same psychological tests on its patients. The results of GHQ12 suggested that the mental health of SMON patients tended to be lower than that of PD patients, and the results of SCT suggested that the positive emotions of PD patients were higher than those of SMON patients. However, due to the different age groups of the two groups and the small number of subjects, further study was necessary. In the emotional expression pattern of SCT, SMON patients showed more positive expression about "Family" and PD patients about "friends". For SMON patients, the presence of their children and grandchildren gave them a sense of security. PD patients viewed their "friends" as important people who could help them with their lives and broaden their horizons, different from their family members. In other words, it was suggested that "family" and "friends" were the respective resources. On the other hand, negative emotions were often expressed as "about the disease" in SMON patients and "anxiety concerns" in PD patients. The average duration of the long years of suffering from SMON is 48.9±4.2 years [5], and the physical, mental, and social pain caused by the disease is immeasurable, which may be due to negative emotions. The "anxiety concerns" of PD patients expressed in the SCT were considered to be equivalent to the strong anxiety and fear of disease progression and the concern that they would lose the ability to do things they used to do on their own as the disease progressed. It was thought that this increased mental stress and affected the body and mind. This difference in emotional expression by SCT between SMON and PD patients may be due to the disease.

The results of GHQ12 suggested that the mental health of SMON patients tended to be lower than that of PD patients, and the results of SCT suggested that the positive emotions of PD patients were higher than those of SMON patients. However, due to the different age groups of the two groups and the small number of subjects, further study was necessary. However, the content of the SCT responses showed that the targets of negative emotions differed between SMON and PD patients, with "illness" being the main target for SMON patients and "anxiety concerns" being the main target for PD patients, which may be related to this disease.

Reference

1. Shimonaka, Junko and Murase, Takao: Self-concept of the elderly from the viewpoint of aging and gender differences, Journal of Educational Psychology, 1976;24: 156-166. （in Japanese）
2. Goldberg, D., (Author), Yasuaki Nakagawa, Ikuo Daibo (Japanese edition), GHQ Mental Health Survey, Japan Edition (Supplementary Edition), Nippon Bunka Sha, 2013, pp69-70. （in Japanese）
3. Hisae Yanai: Excel Statistics, 4th Edition, OMS Publishing 2015,p94-99,p212-218（in Japanese）
4. Konagaya M. SMON: The Origin of side-effects of chemical medicine. Iryo. 2009; 63: 227-234.（in Japanese）
5. M. Konagaya et al. Current status and issues of drug-induced SMON patients, comparison by age of onset, Indicators of Health and Welfare,2018;65:35-42.（in Japanese）
6. Hoshigoe, K. et al. Characteristics of patients with SMON: A study using the Mood Profile Test and the Stress Coping Behavior Questionnaire, Psychosomatic Medicine, 1998; 38: 435-441.（in Japanese）
7. Nagayama H. Mood disorders in Parkinson's disease Journal of the Japanese Medical Association 2016;12:78-85.（in Japanese）
8. Kenji Nakajima et al. Guide to treatment of Parkinson's disease Health and Labor Sciences Research Grants for Intractable Diseases Policy Research Project (Intractable Disease Policy Research Project) Fundamental Research Group for Neurodegenerative Diseases 2016, pp12-13（in Japanese）

9. S. Kikuchi Motor and Psychiatric Symptoms of Parkinson's Disease Neurotherapeutics 2017; 34 : 195-198（in Japanese）Konagaya M. SMON: Origin of side-effects of chemical medicine. Iryo. 2009; 63: 227-234.