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症例報告

Worsening Quality of Life and Development of Restless Legs Syndrome in a Systemic Lupus Erythematosus Patient During the Flare Period: A Case Report

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Abstract

Aim: Sleep disturbance, fatigue, pain, and neuropsychiatric symptoms are commonly seen in patients with systemic lupus erythematosus (SLE). This study aimed to examine the fluctuations in sleep parameters, general quality of life (QOL), and disease-specific QOL from remission to the flare period in a 43-year-old woman with SLE.

Method: In the remission and the flare periods, the Pittsburgh Sleep Quality Index (PSQI), the International Restless Legs Syndrome (IRLS) rating scale, the 12-item Short Form Survey (SF-12), and the Lupus Patients-Reported Outcome tool (LupusPRO) were self-administered. Sleep scan was used to measure sleep latency, sleep efficacy, and the number of awakenings during 4 weeks of remission and flare.

Results: The SLE disease activity index and PSQI scores doubled from the first measurement to the beginning of the flare period. The IRLS scale rose from 0 to 13. At the end of the flare period, pain and vitality scores in both LupusPRO and SF-12 had improved. In particular, this patient had very low social support score during the remission period, and its increase during the flare period probably indicates increased recognition of social support needs. At the end of the flare period, the flare symptoms improved; however, the emotional health score of the LupusPRO worsened.

Conclusion: This result suggests the need for psychological support at this juncture. The most unexpected finding was the appearance of restless legs syndrome (RLS) toward the end of the flare period. The development of RLS at the end of the flare period may reflect a time lag between the worsening of SLE symptoms and RLS.

Key Words：systemic lupus erythematosus, sleep parameters, quality of life, restless legs syndrome, remission, flare

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Introduction

Sleep disturbance, fatigue, pain, and neuropsychiatric symptoms (particularly anxiety, depression, and cognitive impairment) are commonly seen in patients with systemic lupus erythematosus (SLE) [1]. To the best of our knowledge, changes in quality of sleep, general quality of life (QOL), and disease-specific QOL from remission to the flare period in SLE patients have not been reported. This study aimed to examine the fluctuations in sleep parameters, general QOL, and disease-specific QOL from remission to the flare period in a 43-year-old woman with SLE.

Methods

1. Ethical considerations

This study was approved by the Ethics Committee of Hyogo University of Health Sciences and the rheumatology center in Hyogo (ethics committee approval numbers: 17012-2). At the initial contact with the participant, the first author provided a verbal and written explanation to confirm their willingness to participate. After obtaining written informed consent, the first author distributed the questionnaires and the monitoring device to participant.

2. Participant and setting

A female patient was diagnosed with SLE at the age of 22 years. Table 1 displays the laboratory results since the diagnosis of SLE. At the age of 29, she developed lupus nephritis class II. Anti double-stranded DNA (dsDNA) Antibody remained mildly positive for the following 10 years. At the age of 39 years, she was referred to K hospital. The following year, the anti-dsDNA antibody (Ab) level increased to 35IU/mL and she experienced joint pain in the left wrist. The Coombs test had been negative except on one occasion. Then, at the age of 41, anti-dsDNA Ab increased 35IU/mL and pain again developed in the left wrist. At this point, the prednisolone (PSL) dose was increased to 15 mg/day. Three months later, the anti-dsDNA Ab level decreased to 13 IU/mL.

At the age of 43 years, the patient developed a fever (>40°C) with skin rashes and was admitted to the hospital. Laboratory results are presented in Table 1. A spinal tap was performed because of headache, and the interleukin-6 level was 13 pg/mL. On admission, PSL 30mg/day was orally administered. However, pancytopenia persisted, and PSL was increased to 45mg/day 2 weeks after admission. Pancytopenia improved after 3 weeks. The patient's body mass index at the time was 20.0 kg/m^2.

This study was prospective observational study. Data were collected for 4 weeks each at home in the remission preiod (from September to Octorber in 2017) and on admission in the flare period (December in 2017).

Table 1. Laboratory results and corticosteroid dosage from 2009 to 2017

Age	35	41	42	43				
(Month) / Year	2009	2015	2016	9 / 2017	10 / 2017	11 / 2017	12 / 2017	12 / 2017
WBCs (/ μl)	3770	8160	5910	5740	2560	2920	6500	7900
Lymphocytes (/ μl)	569	non	non	360	563	760	1054	1541
RBCs ($\times 10^4$/ μl)	386	384	384	352	334	350	353	363
Hemoglobin (g/dl)	12.3	12.7	12.5	10.9	10.2	10.8	11.3	11.8
Platelets ($\times 10^4$/ μl)	22.5	29.0	27.1	27.5	26.1	20.6	24.1	24.2
CH50 (IU/ml)	15.1	28.2	30	13.6	13.6	24.9	26	27.4
C3 (mg/dl)	40	62	60	52	48	51	52	49
C4 (mg/dl)	70	9	10	5	5	8	7	9
Anti-dsDNA Ab (IU/ml)	24	35	13	22	14	12	<10	<10
Corticosteroids (mg/day)	9.5	15	10	11	30	45	40	30

3. Variables and measurements

Because this case was part of a sleep quality and QOL monitoring study, the patient self-administered the Pittsburgh Sleep Quality Index (PSQI) [2], the International Restless Legs Syndrome (IRLS) rating scale[3], the 12-item Short Form Survey (SF-12) [4], and the Lupus Patients-Reported Outcome tool (LupusPRO) [5] during the remission period. The SLE disease activity index (SLEDAI) was used to ascertain the disease severity. These data were collected four times, at the beginning and end of each of the remission and the flare period. A Nemuri scan (Paramount Bed, Tokyo, Japan) was used to measure sleep latency, sleep efficacy, bed leaving, and the number of awakenings during 4 weeks of remission and flare. Upon admission, the patient requested to be monitored and the measurements were repeated until the flare period. A paired *t*-test was used to test the statistical significance between the two time periods. Descriptive statistics were used to examine changes in general and disease-specific QOL.

Results

Table 2 displays changes in SLEDAI score, global PSQI score, IRLS score, and corticosteroid dosage during the remission and the flare periods. The SLEDAI and PSQI scores doubled from the first measurement to the beginning of the flare period. Among PSQI items, 'wake up in the middle of the night or early morning' and 'have to get up to use the bathroom' increased even though the patient started to take sleeping pills. The IRLS scale rose from 0 to 13, and the IRLS symptoms lasted for a few weeks. Among the four objective sleep parameters, the number of awakenings and bed leaving increased significantly, whereas sleep latency and sleep efficacy did not change significantly (Table 3).

QOL score measured by SF-12 and LupusPRO at the beginning and end of the remission were the same. QOL worsened in the end of the flare period (Figure 1). Social function and role emotional scores of SF-12 were very good at the beginning of the flare period, but worsened by the end of the flare period. At the end of the flare period, pain and vitality scores in both LupusPRO and SF-12 had improved, LupusPRO lupus symptom and cognition scores substantially worsened, and SF-12 social function score worsened, while LupusPRO social support score improved.

Table 2. Changes in corticosteroid dosage, SLEDAI score, global PSQI score, and IRLS scale from remission to flare period

Data	Remission (4-week)		Flare (4-week)		*p-value*
	Beginning	End	Beginning	End	
Corticosteroids (Mean, mg/day) (SD)	10.9 ± 0.3		35.2 ± 4.3		< .0001
SLEDAI	9	18	26	8	N/A
Global PSQI score	6	5	11	12	N/A
IRLS score	0	0	0	13	N/A

SD: standard deviation; SLEDAI: Systemic Lupus Erythematosus Disease Activity Index; PSQI: Pittsburgh Sleep Quality Index; IRLS: International Restless Legs Syndrome; N/A: Not Applicabile.

Table 3. Changes in the mean sleep parameters measured by Nemuri scan from remission and flare period

Sleep parameters	Remission (4-week)	Flare (4-week)	*p Value*
Sleep latency (minutes) (SD)	10.9 ± 6.3	11.4 ± 5.0	0.3742
Sleep efficacy (%) (SD)	92.0 ± 4.8	90.0 ± 4.7	0.9283
Bed leaving (times) (SD)	1.2 ± 1.6	2.1 ± 1.5	0.0094
Being awake (minutes) (SD)	23.5 ± 26.5	35.8 ± 28.0	0.0357

SD: standard deviation.

Discussion

The current study demonstrated worsening of general and disease-specific QOL as well as quality of sleep in our SLE patient during the flare period. Fluctuations in the self-reported sleep parameters between remission and flare periods corresponded well with those in objective sleep parameters, although the patient did not experience severe insomnia.

Changes in the QOL scores underline the importance of monitoring disease-specific QOL in SLE patients. QOL in patients with SLE is difficult to measure using health-related QOL scales[6]. LupusPRO, the disease-specific QOL scale, seems to capture the worsening status of QOL during the flare period. In particular, this patient had very low social support score during the remission period, and its increase during the end of the flare period probably indicates increased recognition of social support needs. At the end of the flare period, it is assumed that social support score of SF-12 worsened due to the interruption of social activities caused by admission. Social support is a key resource for lupus patients with high disease burden[7]. At the end of the flare period, the flare symptoms improved; however, the emotional health score of the LupusPRO worsened. This result suggests the need for psychological support at this juncture. The improvement of inflammatory by corticosteroids[8] and the rest on admission may have led to the improvement of pain and vitality at the end of the flare period. In addition, this patient took about four times more corticosteroids during the flare period than during the remission period. The side effect of corticosteroid[9] may have wosened the cognition score of LupusPRO.

The most unexpected finding was the appearance of restless legs syndrome (RLS) toward the end of the flare period. Risk factors of RLS in SLE patients are anemia[10] and obesity[11], neither of which were apparent in our patient. Moreover, she did not recall any RLS prior to this experience. The development of RLS at the end of the flare period may reflect a time lag between the worsening of SLE symptoms and RLS.

Conclusion

This case report demonstrates the sensitivity of QOL scales in SLE patients and the importance of monitoring disease-specific QOL. It is necessary to pay attention social support at the flare period and, cognitive function due to the increase in corticosteroid dosage. The development of RLS at the end of the flare period suggests the need for further study of the etiology of RLS in SLE patients.

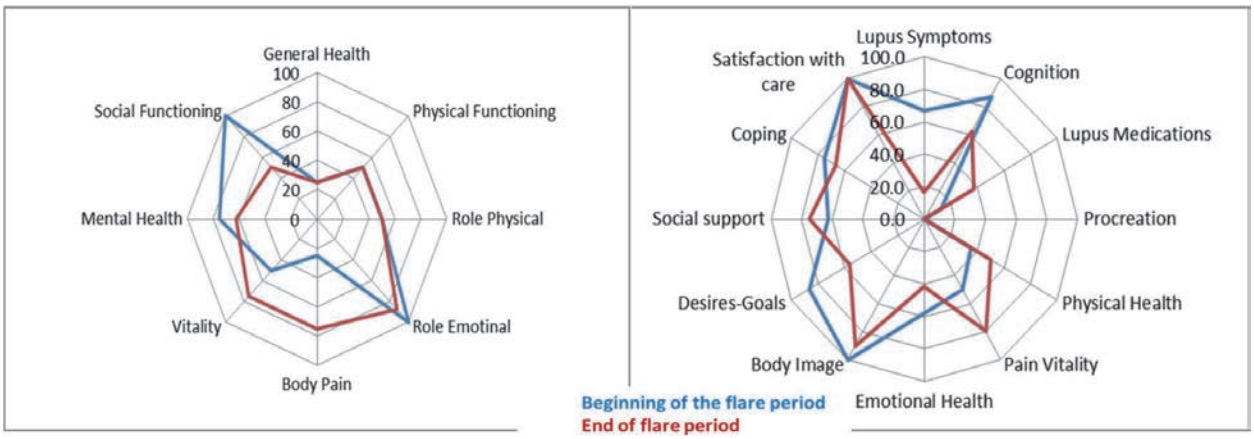

Figure 1. Changes in general health QOL (left: SF-12) and disease-specific QOL (right: LupusPRO) from the beginning of the flare period to the end of the flare period.
SF-12: 12-item Short Form Survey; LupusPRO: Lupus Patients-Reported Outcome tool.

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Conflict of interest statement

The authors declare that there is no conflict of interest.

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