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Feasibility of Modified DLQI-based Questionnaires for Evaluation of Clinical Efficacy of Herbal Medicine in Chronic Skin Diseases

Akio KONDOH, Yukinori OHTA, Kozo YAMAMOTO, Kenichi IWASHITA, Yoshinori UMEZAWA, Takashi MATSUYAMA, Akira OZAWA and Yukito SHINOHARA*

*Department of Dermatology, Division of Specialized Clinical Science and *Department of Oriental Medicine, Tokai University School of Medicine*

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***Background*: The efficacy of herbal medicines is thought to be ambiguous. The quality of life (QOL) of patients has been well-recognized as an useful measurement and we thought it to be a measurement of the efficacy of herbal medicine. *Objective*: The aim of this study was to examine the feasibility of modified DLQI-based questionnaires in evaluating the efficacy of herbal drugs in chronic skin diseases. *Methods*: 19 in-patients with chronic skin diseases were selected and treated by the herbal medicines just added on the previous drugs. By using the QOL-sheet, the patients' QOL before and after herbal treatments were converted to scores and we examined the scores to be a useful measurement. The QOL-sheet was made referring to the dermatology life quality index (DLQI) with our original questions and visual analogue scale (VAS) in Japanese. *Results*: The herbal drugs were effective as the treatment with significant difference ($P<0.05$) at clinical impression, DLQI and VAS. No significant differences of correlation between clinical impression, DLQI/DLQI with AQ and VAS/VAS with AQ was proved ($P>0.05$). *Conclusions*: The QOL-sheet scored both by DLQI and by VAS may be useful to evaluate the efficacy of herbal medicines. However it may be necessary to reconsider the contents of our original questions.**

Key words: Herbal medicine, QOL, dermatitis, pruritis.

INTRODUCTION

In Japan, herbal medicines have been used frequently for skin diseases as either a supportive or second choice oral medication. Some dermatologists, however, especially who are less familiar with this kind of oriental drugs, may often be hesitant about using them because herbal medicines often appear somewhat ambiguous in a comprehensive assessment of clinical efficacy.

The Department of Oriental Medicine at Tokai University School of Medicine was established for both better understanding of the oriental medicine and shedding light on new clinical aspects of this medicine. Recently, the measurement of the quality of life (QOL) has been well recognized as a useful and important parameter in dermatological studies [1, 2]. In this study, we have attempted to clarify whether QOL-based measurements are applicable to the assessment of the clinical efficacy of the herbal medicine.

MATERIALS AND METHODS

Patients

The status of the patients enrolled in this study is summarized in the Table.1. In total, 19 patients (male : 13, female : 6) with chronic skin diseases (seborrheic dermatitis: 9 cases, asteatotic eczema: 6 cases, pruritis: 3 cases, others: 1 case) seen in our dermatological clinic were subjected to the study. The age of the patients ranged from 18 to 86 years

Akio KONDOH, Department of Dermatology, Tokai University School of Medicine, Bohseidai, Isehara, Kanagawa 259-1193, Japan
Tel: +81-463-93-1121 Fax: +81-463-93-9367 E-mail: akio-k@is.icc.u-tokai.ac.jp

(average: 65.4 years of age). Despite the non-hebal medications, these patients had a long diseased period, and the clinical symptoms had shown almost no changes for at least one month before the study. Two herbal medicines, *juumi-haidoku-tou* [3, 4] and *touki-innshi* [5-7], were used in this study. These herbal medicines were proved effective for skin diseases (eczema, dermatitis, urticaria, pruritis, and others) [3-7]. They had been added to the ongoing medications.

QOL-sheet

As a first step of the clinical study for the efficacy of herbal drugs, we evaluated the feasibility of modified dermatology life quality index (DLQI)-based questionnaires (QOL-sheet). The QOL-sheet consisted of 10 questions, each referring to the DLQI [1]. The DLQI designed for routine clinical use has 10 questions concerning the QOL and provides a total score. It is applicable to patients with any skin disease [1]. The original DLQI has check box answers only. Though the original DLQI is in English, we used its Japanese version translated for use in Japanese patients. The reliability and validity of the Japanese DLQI were proved by the previous report [8].

We made slight modifications to the original QOL-sheet to evaluate the efficacy of the herbal medicine. In our QOL-sheet, the patients were also to answer on the visual analogue scale (VAS). Higher scores of DLQI reflect greater impairment. In comparing VAS and DLQI, higher VAS scores indicate greater impairment in our QOL-sheet.

Our QOL-sheet was supplemented with three original questions, referred to as "additional questions (AQ)," that concerned with the therapy using herbal medicines. We set scores to the AQ for combined evaluation with other scores.

By using the QOL-sheet, we compared the scores of before, 2 and/or 4 weeks after the herbal medication. We also evaluated the symptom of patients clinically at 2 and/or 4 weeks after the herbal medication.

The scores of the questions 1 to 10 that were made as DLQI in Japanese were graded according to the original scoring rule of Finlay's report [1]. To score the answers in VAS, patients checked a mark on a 10-cm bar and, as the score of the answer, we determined the distance in cm of the mark from the zero point.

Statistical analysis

Our data were non-parametric, and we used Wilcoxon t-test for data analyses for the effectiveness of the herbal medicines. We analyzed the reliability of the score changes in reflecting the clinical symptoms by Yeats chi-square test. All statistical comparisons were two-tailed and employed $P<0.05$ as the level of significance.

RESULTS

Scores

Among the 19 patients, the score changes were verified in 17 patients (89.5%). The herbal medications were clinically effective in 12 patients (70.6%). In the DLQI scoring, scores decreased in 11 patients (64.7%). The VAS scores decreased in 10 patients (66.7%). One case (patient No.17) showed discordant changes of the scores between the DLQI and VAS. For 4 cases (patient No.2, 3, 13, and 17 at 2 weeks after the herbal medications) with changes in the scores, the changes of the clinical symptoms were not verified by dermatologists (Table 1). When the scores of the three AQ, which referred to the negative elements of the herbal medicines, were included, the total score ecreased in 9 cases (52.9%) each for the DLQI and VAS. The changes in the DLQI and VAS scores were reversed by evaluation with the AQ in 2 cases (patient No.11 and 18) (Table 2).

Effectiveness of the herbal medicines

Regarding the clinical impressions, a significant difference (Wilcoxon $t=22.5$, $P=0.0344$) was observed between before and 2 or 4 weeks after the herbal medicines (Table 3a). Likewise, significant differences were observed in the DLQI (Wilcoxon $t=29$, $P=0.0443$; Table 3b) and VAS (Wilcoxon $t=25$, $P=0.0476$; Table 3c).

Estimation of the score changes

For the DLQI, all patients answered to all questions. Some patients did not answer to some questions of the VAS. We analyzed the differences between the clinical impressions and the DLQI or VAS and those between the DLQI and VAS, excluding the patients with blank data. Between the clinical impressions and the DLQI, no significant difference was observed (Yates chi=0, P=1; Table 4a). Between the clinical impressions and the VAS, no significant difference was found (Yates chi

Table 1 Patient status and results of the scores (DLQI and VAS)

patients	1			2			3			4			7			8		9		10		11		12			13			14			15			16			17		18		19		
age	73			75			86			79			77			18		76		69		82		69			70			45			60			52			65		42		74		
sex*1	M			M			M			F			F			M		F		M		M		M			M			M			M			F			M		F		M		
disease*2	2			1			4			2			2			1		2		3		1		2			1			1			1			1			1		3		1		
prescription*3	6			6			6			86			6			6		6		86		6		6			86			6			6			6			6		86		6		
period*4	0	2	4	0	2	4	0	2	4	0	2	4	0	2	4	0	2	0	2	0	2	0	2	0	2	4	0	2	4	0	2	4	0	2	4	0	2	0	2	0	2	4
DLQI	16	5	5	5	6	13	9	10	5	10	n	0	2	2	2	11	2	23	2	6	5	1	0	13	6	2	7	8	8	2	1	0	1	2	2	1	0	0	6	7	17	13	4	5	6
VAS	53.1	7.9	10.3	14.2	13.1	31.1	24.7	26.4	n	29.4	n	0	4.9	n	n	45.6	4	64.6	n	15.3	8.7	5	0	70.9	64.3	53.4	22.5	24.2	20.2	2.6	0.1	0	2.2	5	4	0.4	0	0	14.6	6.1	59.6	53.5	12.2	12.2	19.5
clinical impression*5		1	0		0	−1		0	1			1		1	1		2		1		1		1			1		0	0		1	1		−1	−1		1	1		0		1		0	−1

*1 : M : male F : female

*2 : 1 : seborrheic dermatitis
2 : asteatotic eczema
3 : pruritis
4 : others

*3 : 6 : *jumi-haidoku-tou*
86 : *touki-inshi*

*4 : 0 : before
2 : 2 weeks after
4 : 4 weeks after

*5 : 2 : the effect was high
1 : improving
0 : same
−1 : worsening

n : no data

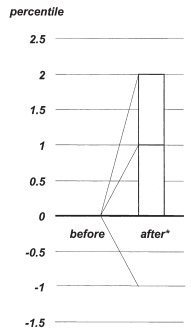
Table 2 Scores of AQ

patients	1			2			3			4			7			8		9		10		11		12			13			14			15			16			17		18		19		
period*4	0	2	4	0	2	4	0	2	4	0	2	4	0	2	4	0	2	0	2	0	2	0	2	0	2	4	0	2	4	0	2	4	0	2	4	0	2	4	0	2	0	2	0	2	4
AQ11	0	6.3	5.3	0.9	0	1.8	0	1	0	0.8	n	0	0	n	5	0	0	3.7	7	0	0	0	6.8	0	0.4	0.7	0	0	0	0	0	0	0	0	0	0	0	0.3	0	0	0.8	0	6	0	0.5	0.5
AQ12	0	0	0	1	2	1	0	1	0	0	n	0	0	n	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0
AQ13	0	0	0	9	2.1	0.3	0	0	0	0	n	0.2	0	n	0	0	0	0	0.2	0	1	0	0	0	0	0	0	0.1	0.1	0	0.1	0.2	0	0	0	0	0.2	0.2	0	0.1	0	0	0	0	0
total	0	6.3	5.3	1.9	4.1	3.1	0	2	0	0.8	n	0.2	0	n	5	0	0	4.7	7.2	0	1	0	6.8	0	0.4	0.7	0	0.1	0.1	1	1.1	0.2	0	0	0	0	0.5	0.2	0	0.9	0	7	0	0.5	0.5
DLQI+AQ	16	11.3	10.3	6.9	10.1	16.1	9	12	9	10.8	n	0.2	2	n	7	11	2	27.7	9.2	6	6	1	6.8	13	6.4	2.7	7	8.1	8.1	3	2.1	0.2	1	2	2	1	0.5	0.2	6	7.9	17	20	4	5.5	6.5
VAS+AQ	53.1	14.2	15.6	16.1	17.2	34.2	24.7	28.4	n	30.2	n	0.2	6.9	n	n	45.6	4	69.3	n	15.3	8.7	5	6.8	70.9	64.7	54.1	22.5	24.3	20.3	3.6	0.2	0.2	2.2	5	4	0.4	0.5	0.2	14.6	7	59.6	60.5	12.2	12.7	20

*4 : 0 : before
2 : 2 weeks after
4 : 4 weeks after

n : no data

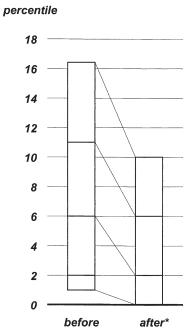
Table 3 The results of analysis of score changing



Wilcoxon t = 22.5

P=0.0344

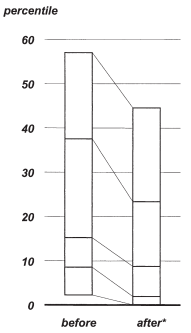
a : clinical impression



Wilcoxon t = 29

P=0.0443

b : DLQI



Wilcoxon t = 25

P=0.0476

c : VAS

* : 2 or 4 weeks after

Table 4 The results of analysis of Table. 1 : without AQ

a : clinical impression v.s. DLQI

	effective	not effective	total	
Clinical impression	10	7	17	Yates chi = 0
DLQI	11	6	17	P = 1

b : clinical impression v.s. VAS

	effective	not effective	total	
Clinical impression	7	8	15	Yates chi = 1.25
VAS	11	4	15	P = 0.264

c : DLQI v.s. VAS

	effective	not effective	total	
DLQI	9	6	15	Yates chi = 0.15
VAS	11	4	15	P = 0.699

Table 5 The results of analysis of Table. 1 : with AQ

a : clinical impression v.s. DLQI+AQ

	effective	not effective	total	
Clinical impression	12	5	17	Yates chi = 1.09
DLQI+AQ	8	9	17	P = 0.296

b : clinical impression v.s. VAS+AQ

	effective	not effective	total	
Clinical impression	9	6	15	Yates chi = 0.139
VAS+AQ	9	6	15	P = 0.709

c : DLQI+AQ v.s. VAS+AQ

	effective	not effective	total	
DLQI+AQ	6	8	14	Yates chi = 0.574
VAS+AQ	9	5	14	P = 0.449

=1.25, P=0.264; Table 4b). With respect to the relationship between the DLQI and VAS, no significant difference was apparent (Yates chi=0.15, P=0.699; Table 4c).

Similarly, we analyzed the score changes in the DLQI and VAS with the scores of the additional questions, AQ. Between the clinical impression and the DLQI with AQ, no significant difference (Yates chi=1.09, P=0.296) was found (Table 5a). No significant difference (Yates chi=0.139, P=0.709) was observed between the clinical impression and the VAS with AQ (Table 5b). No significant difference was found between the DLQI with the AQ or the VAS with the AQ (Yates chi=0.574, P=0.449; Table 5c).

DISCUSSION

Recently some instruments relating to the patients' QOL were established in dermatology. For example, Abeni D *et al*. [2] verified the validity and reliability of the Skindex-29, a 29-item self-administered questionnaire for assessing the QOL of patients with skin diseases in 3 domains. This instrument has specificities for the diseases and is now under evaluation in a greater number of skin diseases. The DLQI contains brief 10 items relating to the QOL of the patients with skin diseases. This instrument was established by Finlay *et al*. for clinical use and is applicable to patients with any skin disease [1]. The original DLQI and its Japanese translation were proved for the reliability and validity by the psychometrical analyses in the previous reports [1, 8]. These scales are established for estimating the severity of patients' diseases.

In Japan, the herbal medicines have been used commonly by physicians. In dermatology, some reports showed the effectiveness of the herbal medicines for skin diseases [3-7]. However, some dermatologists, especially who are less familiar with this kind of oriental drugs, often hesitate at their use because the herbal medicines can be somewhat ambiguous in a comprehensive assessment of clinical efficacy. For this reason, we attempted to clarify the applicability of the QOL-related scoring methods to assessing the efficacy of the herbal medicines. In this study, we prepared a QOL-sheet referring to DLQI because the scaling of the original DLQI is applicable to patients with any skin diseases.

As shown in the results, the herbal medicines that we selected were clinically effective for the chronic skin diseases. The effectiveness of the herbal medicines were comparable to that of the previous reports [3-7]. Statistically, the changes in the DLQI and VAS scores agreed with the clinically proven effectiveness of the herbal medicines ($P<0.05$). No significant difference was found between the clinical impressions and the DLQI with the AQ or the VAS with the AQ ($P>0.05$). Thus, the results indicate that our QOL-sheet is useful for the evaluation of the efficacy of the herbal medicine. The QOL-sheet appears particularly useful in evaluating the efficacy of the herbal medicines for some skin diseases such as pruritis without skin lesions and the patients with uncertain changes of the clinical symptoms (e.g., patient No.2, 3, 13, and 17).

The number of cases judged 'effective' by the changes in the DLQI or VAS scores was 11 and 10, respectively. On the other hand, the number of cases judged 'effective' by the score changes in the DLQI with the AQ or the VAS with the AQ was 9 and 9, respectively. When evaluated by the DLQI with the AQ or VAS with the AQ, the number of effective cases was fewer than that obtained by the DLQI or VAS alone. Because these additional questions were related to the negative elements of the herbal medicines, the scoring with the AQ can necessarily be higher, leading to poorer effectiveness than that revealed by the clinical symptoms, DLQI or VAS. It may be necessary to reconsider the contents of the additional questions.

In conclusion, we showed that the QOL-sheet is useful to evaluate the efficacy of the herbal medicines. However, it may be necessary to reconsider the contents of our original questions. Further studies with larger samples are required to fully establish both the applicability and reliability of the QOL-based evaluation of the herbal medications in patients with skin diseases.

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