

represented pre-coaching. In session 1 the patient and coach introduced each other, and the patient was encouraged to ask questions about coaching and about the study. Between sessions 1 and 2, and between sessions 2 and 3, a questionnaire was mailed to the patient for return to the coach upon its completion. The first of these concerned outlook and attitude regarding health status; personal and social interaction; and lifestyle. In session 2, while referring to the questionnaire, the coach talked with patients about what they wanted to accomplish in the next two years. The second questionnaire concerned the patient's ability to ask for help, express requests and feelings, and choose appropriate words. Each item had a four-response, Likert-type format with statements followed by replies ranging from 'strongly agree' to 'disagree'. In discussions during session 3, referring to the questionnaire, the coach assessed the patient's ability to communicate orally.

Each patient was coached by one of three physicians (a psychiatrist, a haematologist or an ophthalmologist), all having practised for 19–21 years after graduation from medical school, having undergone coach training, and having themselves been coached by professional coaches certified by the International Coach Federation (ICF). Each of the three coaches received feedback from assigned patients after sessions 4 and 8 in the form of a 19-item evaluation concerning attitudes and skills of the coach using a five-response Likert-type format with replies ranging from 'strongly agree' to 'strongly disagree'.

To control quality of coaching interventions, weekly 15- to 30-minute telephone conferences were conducted among the coaches using a tele-conference system (Coach 21, Tokyo). In addition to the three physician coaches, two ICF-certified coaches participated in the telephone conference; one coach, a Master Certified Coach, mentored the physician coaches, and the other, a Professional Certified Coach, modulated the telephone conferences.

#### Analysis

Baseline demographic and clinical characteristics of control and experimental subjects were compared using unpaired *t*-tests for continuous data and chi-squared tests for categorical data.

A one sample *t*-test was used to compare baseline score in the SF-36 for the patients studied with normative data obtained in Japan.

Differences in change of scores from baseline (T1) to follow-up (T2) between control and experimental groups were assessed using analysis of variance (ANOVA), and analysis of covariance (ANCOVA), using baseline scores as a covariate.

Barthel Index scores were compared between experimental and control groups using the Mann-Whitney *U*-test at both T1 and T2. Differences in Barthel Index scores between T1 and T2 were assessed for the experimental group and for all subjects using Wilcoxon's signed-rank test.

The significance level was set at  $\alpha < 0.05$ . Statistical analysis was performed with the SPSS 13.0.1J software package (SPSS, Chicago, IL, USA).

Notes of conversations during each session were taken by each coach, although sessions were not recorded electronically. Qualitative analysis of the coaching logs will be reported elsewhere.

#### Results

Of the 11 women (mean age, 46.6 years; SD 12.8 years) and 15 men (mean age, 46.9 years; SD 11.6 years) who met entry criteria and gave their informed consent, one candidate did not participate because of business matters; another could not complete the study because of difficulties in holding the telephone receiver for more than 10 minutes. The other 24 participants completed the study.

All participants had dysarthria and ataxia, with no particular comorbidities recorded. Cognitive Functional Independence Measure scores were full in all patients. No change was made in patients' medical treatment during the study period.

All coaching sessions were completed, and all data including the SF-36 and NAS-J were collected successfully from the 24 participants. Although the patients had dysarthria, effective communication was achieved during tele-coaching sessions by having patients speak at their own pace and having coaches rephrase patients' words when necessary to confirm accurate understanding of what patients said.

Characteristics of the groups studied are summarized in Table 1. No statistically significant difference was evident in distribution of gender, age, or specific diagnosis between experimental and control groups.

Compared with normative data obtained in Japan, SF-36 subscores in the present participants were significantly lower for physical functioning (mean and SD: 31.1; 17.6), role physical (38.8; 11.6), general health (39.0; 7.4), social functioning (41.2; 15.0) and role emotional (43.1; 14.4). Differences from normative scores of 50 ranged from 6.9 to 18.9 points. In contrast, scores for bodily pain (51.7; 11.3), vitality (46.2; 10.8) and mental health (46.2; 11.4) were essentially similar to normative data.

Although SF-36 and NAS-J subscores did not differ significantly between experimental and control groups, the experimental group appeared to be more functionally impaired than controls (mean physical functioning, 27.0 and 35.2 respectively). The Barthel Index in the experimental group was lower than in the control group, but not significantly.

Scores of SF-36 and NAS-J for experimental and control groups at baseline (T1) and follow-up (T2) are summarized in Table 2. Two-way ANOVA (group  $\times$  time) showed main effects of time for vitality, anxiety/depression and locus of control scores to be statistically significant, while these variables improved over time in both experimental and control groups. However, no main effect of group or interaction effects between time and group were seen.

With baseline scores as a covariate, ANCOVA detected significant intergroup differences in

self-efficacy, indicating that the experimental group at follow-up (T2) had greater self-efficacy than the as-yet uncoached control group (T2; Table 3).

No statistically significant difference in Barthel Index was noted between experimental and control groups at follow-up (T2). Barthel Index at T2 did not differ significantly from that at T1 in either the experimental or control group.

## Discussion

This small randomized trial provides preliminary evidence that carefully structured telephone coaching has the potential to improve psychological adjustment to illness in patients with spinocerebellar degeneration who are living independently in terms of basic ADL. The self-efficacy score in the experimental group was higher at follow-up (T2) than in the control group still awaiting coaching. Such tele-coaching has not been investigated in neurodegenerative diseases or other diseases representing movement disorders.

The ANCOVA results indicated that the coaching intervention enhanced self-efficacy in the experimental group. However, two-way ANOVA detected no interaction effect (i.e. no intervention effect), possibly because the difference in baseline scores between the two groups was not taken into account in the two-way ANOVA. The self-efficacy scores at baseline indeed differed between the experimental and control groups, although the difference fell short of statistical significance. In addition, small sample size in this study may have limited its ability to detect intervention effects by

**Table 1** Characteristics of patients

	Experimental group (n = 12)		Control group (n = 12)	
Female	5	(42%)	5	(42%)
Mean age (SD)	48.3	(13.0)	47.3	(10.8)
Diagnosis				
Sporadic spinocerebellar degeneration	2	(16.7%)	3	(25.0%)
Autosomal dominant inherited	10	(83.3%)	8	(66.7%)
Others	0	(0.0%)	1	(8.3%)
Barthel Index: mean (SD)	95.5	(5.68)	99.2	(2.89)

**Table 2** Scores for the Medical Outcomes Study Short-Form 36-Item Health Survey (SF-36) and Nottingham Adjustment Scale, Japanese version (NAS-J) in the experimental and control groups at baseline and follow-up

	Experimental group <sup>a</sup>		Control group <sup>a</sup>		Main effect of time		Main effect of group		Interaction effect	
	Baseline	Follow-up	Baseline	Follow-up	F	P-value	F	P-value	F	P-value
SF-36										
Physical functioning	27.0 (22.1)	28.0 (23.3)	35.2 (11.3)	36.3 (12.8)	0.25	0.621	1.36	0.256	0.00	0.987
Role physical	38.3 (12.0)	41.7 (19.8)	39.2 (11.8)	39.8 (14.1)	0.68	0.419	0.01	0.919	0.35	0.561
Body pain	48.6 (13.1)	53.0 (10.8)	54.9 (8.7)	54.8 (9.1)	1.66	0.211	1.05	0.316	1.77	0.197
General health	38.4 (6.5)	41.8 (9.6)	39.6 (6.3)	40.2 (6.9)	1.40	0.250	0.00	0.954	0.67	0.421
Vitality	47.5 (9.9)	51.5 (12.3)	44.9 (12.0)	48.4 (13.0)	5.00	0.036	0.40	0.534	0.02	0.898
Social functioning	43.9 (12.2)	46.7 (16.0)	38.5 (17.5)	40.6 (17.0)	0.85	0.367	0.96	0.337	0.01	0.917
Role emotional	43.1 (17.3)	43.5 (21.1)	43.1 (11.6)	48.4 (10.0)	1.68	0.208	0.17	0.684	1.28	0.270
Mental health	46.6 (11.8)	49.3 (11.7)	45.8 (11.5)	48.3 (12.3)	2.40	0.136	0.04	0.848	0.00	0.969
NAS-J										
Anxiety/depression	78.1 (22.1)	81.9 (23.9)	72.2 (19.1)	81.2 (16.0)	5.15	0.033	0.17	0.681	0.81	0.378
Self-esteem	51.6 (17.9)	50.0 (30.8)	45.3 (15.6)	55.8 (21.7)	1.11	0.305	0.00	0.975	2.02	0.170
Attitude	43.2 (18.6)	38.6 (24.8)	39.1 (17.7)	45.5 (20.4)	0.03	0.859	0.02	0.891	2.54	0.126
Locus of control	54.9 (17.2)	58.7 (11.3)	55.6 (18.9)	63.9 (19.9)	5.68	0.027	0.77	0.390	0.21	0.654
Acceptance	44.8 (17.5)	49.3 (26.4)	43.4 (22.2)	45.1 (17.2)	0.66	0.462	0.13	0.718	0.11	0.741
Self-efficacy	60.4 (25.5)	67.2 (20.5)	53.7 (21.9)	50.5 (19.3)	0.32	0.578	1.37	0.174	2.33	0.141

<sup>a</sup>Scores are shown as the mean, followed by SD in parentheses.

**Table 3** Comparison of follow-up data at three months between experimental and control groups by ANCOVA using the baseline score as a covariate, in terms of effect of intervention

	Least-square mean (SE)		Multiple comparison
	Experimental group	Control group	P-value
<b>SF-36</b>			
Physical functioning	31.7 (3.18)	32.7 (3.18)	0.827
Role physical	42.2 (3.47)	39.3 (3.47)	0.563
Bodily pain	55.0 (2.16)	52.8 (2.16)	0.501
General health	42.1 (2.21)	39.9 (2.21)	0.494
Vitality	50.4 (2.43)	49.6 (2.43)	0.825
Social functioning	44.7 (3.70)	42.6 (3.70)	0.694
Role emotional	43.5 (3.10)	48.4 (3.10)	0.273
Mental health	49.0 (2.32)	48.6 (2.32)	0.925
<b>NAS-J</b>			
Anxiety/depression	79.7 (3.85)	83.4 (3.85)	0.506
Self-esteem	46.9 (6.17)	58.9 (6.17)	0.187
Attitude	36.7 (5.27)	47.3 (5.04)	0.162
Locus of control	58.9 (3.25)	63.7 (3.25)	0.312
Acceptance	48.9 (5.54)	45.6 (5.54)	0.675
Self-efficacy	65.1 (3.92)	52.7 (3.92)	0.037

SF-36, Medical Outcomes Study Short-Form 36-Item Health Survey; NAS-J, Nottingham Adjustment Scale, Japanese version.

two-way ANOVA, resulting in a difference in findings from those by ANCOVA. More participants would be needed in the future studies for more sensitive detection of effects of coaching intervention.

The means by which coaching produces a positive effect was not directly determined in this study. One possible explanation is that the coaches helped patients to produce fulfilling results in their personal and professional lives; another involves a psychological response shift representing a change in perception of health status. In addition, differences in vitality, anxiety/depression and locus of control scores between baseline and follow-up (without a group difference) could be explained by non-specific attention (i.e. a Hawthorne effect: patients might have felt comforted by additional attention from physicians). Better understanding of the process of the coaching intervention and reasons for effectiveness will require qualitative analysis.<sup>20,21</sup>

Coaching intervention in this study was carried out by telephone. Telephone coaching as tele-rehabilitation has been reported by several authors,<sup>22-24</sup> and telephone-based interventions are widely used in managing various medical

problems.<sup>25-29</sup> In this study telephone calls from the coaches appeared to be a convenient form of intervention for spinocerebellar degeneration patients living relatively far from the university hospital.

Structured coaching in this study included telephone conferences among coaches, and feedback from patients to coaches. In the weekly telephone conferences, physician coaches were mentored by professional coaches. Physician coaches also received feedback from their assigned coaching patients. We believe that these procedures were useful in quality control of the coaching intervention. In addition to quality control, feedback from patients to coaches might have contributed to interactive communication between them, resulting in enhancement of self-efficacy.

Participants had slowly progressive neurologic disorders and lived independently in spite of their disabilities. Tele-coaching improved self-efficacy of patients without producing changes in HRQOL and ADL. Self-efficacy, defined as individuals' confidence or belief that they can perform a given action, is a salient predictor of enduring health behaviour change<sup>30</sup> that has been measured as a successful assessment tool in

#### Clinical messages

- Over three months, weekly coaching intervention by telephone can improve self-efficacy in spinocerebellar degeneration patients who live independently.
- Psychological adjustment of neurodegenerative diseases can be enhanced by coaching conversation, without causing changes in health-related quality of life or activities of daily living.

psychotherapy and behavioural modification programmes.<sup>31</sup>

Bandura<sup>32</sup> devised a theory of self-efficacy that has been incorporated into rehabilitation, noting that a feeling of self-efficacy would not develop and emerge naturally. He stated that 'expectations of personal efficacy are derived from four principal sources of information: performance accomplishments, vicarious experience, verbal persuasion, and physiological states.' Specifically, performance accomplishments refers to personal mastering of a task; vicarious experience, to observing others perform threatening activities without adverse consequences; verbal persuasion, to leading a person to perform a task through suggestion; and physiological state, to the effect of states such as arousal or relaxation on performance. Tele-coaching might have facilitated these four processes through undetermined changes implemented by the patient as the main actor in his own life.

Our experimental subjects had somewhat lower Barthel Index scores than the control group, representing mild disabilities that would not necessarily offset coaching effects. Further studies may be necessary to determine whether tele-coaching is effective in more disabled patients, and also whether enhancement of self-efficacy by coaching can eventually improve HRQOL or maintenance of ADL when the duration of intervention and follow-up is extended.

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#### Competing interests

None declared.

#### References

- 1 Hirono N, Yamadori A, Kameyama M, Mezaki T, Abe K. Spinocerebellar degeneration (spinocerebellar degeneration): cognitive disturbances. *Acta Neurol Scand* 1991; **84**: 226-30.
- 2 Iizuka T, Ogata Y, Minowa M, Fujita T. A follow-up study on effects of ADL deterioration on QOL in patients with neurological intractable diseases. *Nippon Koshu Eisei Zasshi* 1999; **46**: 595-603.
- 3 Steptoe A, Mohabir A, Mahon NG, McKenna WJ. Health related quality of life and psychological wellbeing in patients with dilated cardiomyopathy. *Heart* 2000; **83**: 645-50.
- 4 Suzukamo Y, Ohbu S, Kondo T, Kohmoto J, Fukuhara S. Psychological adjustment has a greater effect on health-related quality of life than on severity of disease in Parkinson's disease. *Mov Disord* 2006; **21**: 761-66.
- 5 International Coach Federation. *The ICF Code of Ethics*. Accessed 6 September 2006 from: [www.coachfederation.org/ICF/For+Current+Members/Ethical+Guidelines/](http://www.coachfederation.org/ICF/For+Current+Members/Ethical+Guidelines/)
- 6 Sacco WP, Morrison AD, Malone JJ. A brief, regular, proactive telephone 'coaching' intervention for diabetes. Rationale, description, and preliminary results. *J Diab. Compl.* 2004; **18**: 113-18.

- 7 Vale MJ, Jelinek MV, Best JD, Santamaria JD. Coaching patients with coronary heart diseases to achieve the target cholesterol: a method to bridge the gap between evidence-based medicine and the 'real world' – randomized controlled trial. *J Clin Epidemiol* 2002; **55**: 245–52.
- 8 Vale MJ, Jelinek MV, Best JD et al. Coaching patients on achieving cardiovascular health (COACH). A multicenter randomized trial in patients with coronary heart disease. *Arch Intern Med* 2003; **163**: 2775–83.
- 9 Lynch TR, Morse JQ, Mendelson T, Robins CJ. Dialectical behavior therapy for depressed older adults. *Am J Geriatr Psychiatry* 2003; **11**: 33–45.
- 10 Oliver JW, Kravitz RL, Kaplan SH, Meyers FJ. Individualized patient education and coaching to improve pain control among cancer outpatients. *J Clin Oncol* 2001; **19**: 2206–12.
- 11 Dowd T, Kolcaba K, Steiner R. The addition of coaching to cognitive strategies: intervention for persons with compromised urinary bladder syndrome. *J Wound Ostomy Continence Nurs* 2003; **30**: 90–99.
- 12 Data management service of the Uniform Data System for medical rehabilitation and the Center for Functional Assessment Research. *Guide for use of the uniform data set for medical rehabilitation*, version 3.0. State University of New York at Buffalo, 1990.
- 13 Ware JE, Sherburne CD. The MOS 36-item Short-Form Health Survey (SF-36): I. Conceptual framework and item selection. *Med Care* 1992; **30**: 473–83.
- 14 Fukuhara S, Bito S, Green J, Hsiao A, Kurokawa K. Translation, adaptation, and validation of the SF-36 Health Survey for use in Japan. *J Clin Epidemiol* 1998; **51**: 1037–44.
- 15 Dodds AG, Bailey P, Pearson A, Yates L. Psychological factors in acquired visual impairment: the development of a scale of adjustment. *J Visual Impairment Blindness* 1991; **85**: 306–10.
- 16 Suzukamo Y, Kumano H, Iwaya T. Development and validation of 'The Nottingham Adjustment Scale Japanese Version' which measures psychological adjustment to the visual impairment. *Jpn J Psychosom Med* 2001; **41**: 610–18.
- 17 Koyama Y, Miyashita M, Kazuma K et al. Preparing a version of the Nottingham Adjustment Scale (for psychological adjustment) tailored to osteoarthritis of the hip. *J Orthop Sci* 2006; **11**: 359–64.
- 18 Yaguchi K, Kai I, Sato M, Suzukamo Y. Applicability of a modified Nottingham Adjustment Scale – Japan to the patients after laryngectomy. *J Jpn Acad Nurs Sci* 2004; **24**: 53–59.
- 19 Mahoney FI, Barthel DW. Functional evaluation; the Barthel Index. *Md State Med J* 1965; **14**: 61–65.
- 20 Wittemore R, Chase SK, Mandle CL, Roy SC. Lifestyle change in type 2 diabetes: a process model. *Nurs Res* 2002; **51**: 18–25.
- 21 Kawa M, Kayama M, Maeyama E et al. Distress of inpatients with terminal cancer in Japanese palliative care units: from the view point of spirituality. *Support Care Cancer* 2003; **11**: 481–90.
- 22 Ricker JH, Rosenthal M, Garay E et al. Telerehabilitation needs: a survey of persons with acquired brain injury. *J Head Trauma Rehabil* 2002; **17**: 242–50.
- 23 Savard L, Borstad A, Tkachuk J, Lauderdale D, Conroy B. Telerehabilitation consultations for clients with neurologic diagnoses: cases from rural Minnesota and American Samoa. *NeuroRehabilitation* 2003; **18**: 93–102.
- 24 Egner A, Phillips VL, Vora R, Wiggers E. Depression, fatigue, and health-related quality of life among people with advanced multiple sclerosis: results from an exploratory telerehabilitation study. *NeuroRehabilitation* 2003; **18**: 125–33.
- 25 McBride CM, Rimer BK. Using the telephone to improve health behavior and health service delivery. *Patient Educ Couns* 1999; **37**: 3–18.
- 26 Estey AL, Tan MH, Mann K. Follow-up intervention: its effect on compliance behavior to a diabetes regimen. *Diabetes Educ* 1990; **16**: 291–95.
- 27 Piette JD, Weinberger M, McPhee SJ, Mah CA, Kraemer FB, Crapo LM. Do automated calls with nurse follow-up improve self-care and glycemic control among vulnerable patients with diabetes? *Am J Med* 2000; **108**: 20–27.
- 28 Weinberger M, Kirkman MS, Samsa GP et al. A nurse coordinated intervention for primary care patients with non-insulin-dependent diabetes mellitus: impact on glycemic control and health-related quality of life. *J Gen Intern Med* 1995; **10**: 59–66.
- 29 Whitlock WL, Brown A, Moore K et al. Telemedicine improved diabetic management. *Military Med* 2000; **165**: 579–84.
- 30 Bandura A. *Self-efficacy: the exercise of control*. Freeman, 1997.
- 31 Berarducci A, Lengacher CA. Self-efficacy: as essential component of advanced-practice nursing. *Nurs Connect* 1998; **11**: 55–67.
- 32 Bandura A. Self-efficacy: toward a unifying theory of behavioral change. *Psychol Rev* 1977; **84**: 191–215.

# Analysis of subjective evaluations of the functions of tele-coaching intervention in patients with spinocerebellar degeneration

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**Abstract.** Few studies have revealed the impact of tele-coaching on patients with intractable diseases, including intractable neurological diseases. This study aimed to analyze and describe subjective evaluations of coaches and intervention subjects on the functions of tele-coaching intervention for patients with spinocerebellar degeneration. This qualitative descriptive study was conducted between December 2005 to July 2006. Immediately prior to data collection three experienced coaches had delivered individual 10 session semi-structured tele-coaching interventions to 24 subjects. Data from the 24 logs kept by coaches and individual interviews with the three coaches and nine patients were analyzed using a content analysis technique. Although patients' subjective evaluations varied, the themes that emerged from the data analysis were generally positive: that the tele-coaching enabled patients to tell their own stories in a daily-life setting, encouraged them to experience and adopt fresh points of view, and helped them to start working towards attainable goals without giving up. Our results indicate that it is especially important to encourage patients with intractable diseases to become aware of their latent desires and goals. For patients such as those with spinocerebellar degeneration the time frame for coaching interventions might be extended when required to accommodate treatment of their changing medical and mental condition.

**Keywords:** Coaching, tele-coaching, rehabilitation, spinocerebellar degeneration, qualitative research, content analysis

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## 1. Foreword

### 1.1. Background of the study

Spinocerebellar degeneration and other intractable neurodegenerative diseases follow a chronic course, respond to only a limited number effective therapy, and entail prolonged care for physical disorders. Most methods to alleviate the physical disorders involve rehabilitative interventions such as therapeutic exercises, walking aids, orthoses, and environmental manipulation. Patients with neurodegenerative diseases bear mental as well as physical burdens.

The progression of disability in activities of daily living has been reported to adversely affect the quality of life of patients with intractable neurological diseases [5]; Moreover, in some patients the diagnosis and experience of spinocerebellar degeneration can reveal depressive emotional disturbance [4]. All patients are likely to be concerned about functionally poor prognosis and the socioeconomic problems associated with diseases expected to be prolonged. Accordingly, the main objective in the management of neurodegenerative diseases should be to maintain or improve quality of life.

It has been reported that psychological adjustment has a greater effect on health-related quality of life than on disease severity in patients with chronic diseases [15, 16]. Psychosocial intervention is thought to be conducive to quality of life and psychological adjustment to diseases. However, only a few studies have focused on the effects of such interventions.

Professional coaching is an ongoing relationship that aids people in achieving extraordinary results in their lives, careers, businesses, or organizations. Through this process, clients deepen their learning, improve their performance, and enhance their quality of life [17]. The efficacy of coaching has been reported for patients with various pathologies, including diabetes [12], hyperlipidemia [18,19], cancer pain [9], and urinary disturbance [1]. The outcomes in these studies were evaluated not in terms of quality of life, but by assessing indexes of disease severity such as the pain index [9], serum cholesterol level [18,19], hemoglobin A1c [12], and Bladder Function Questionnaire [1]. Coaching has been proposed to be effective by promoting self-discipline [12], compliance with treatment regimens [18], and effective communication with physicians for obtaining consent to treatment regimens and enhancing self-efficacy [9]. Telephone coaching as tele-rehabilitation has been reported by several au-

thors [2,10,13], and telephone-based interventions are widely used in managing various medical problems [3, 8,11,21,22]. A study in the field of rehabilitation examined an intervention structure for home rehabilitation linked with supports for early hospital discharge [20]; this served as a basis of later large-scale studies [6]. As of this writing, however, there is no consensus on the mechanisms underlying coaching efficacy.

To evaluate the effectiveness of a coaching intervention for patients with spinocerebellar degeneration a randomized controlled trial of a telephone tele-coaching intervention was conducted by Izumi et al. as a pilot study, "Study on Tele-coaching Intervention: Randomized Controlled Study in Patients with Spinocerebellar Degeneration" [14]. Because qualitative research can be used to describe subjective experiences in detail, a qualitative study was planned as part of the study of Izumi et al. in order to more fully explore the processes and effects of the intervention. This paper reports the results of that qualitative study. The findings of Izumi et al. indicated that self-efficacy of the intervention subjects increased as a result of three-month tele-coaching intervention [14]. The present study was designed to investigate subjective evaluations of coaches and intervention subjects on the functions of tele-coaching intervention, and clarify the structure of direct human intervention and the mechanism of the efficacy.

### 1.2. Objective and significance of the study

This study aimed to analyze and describe subjective evaluations of coaches and intervention subjects on the functions of tele-coaching intervention for patients with spinocerebellar degeneration. Few studies in the past have examined the subjective evaluations of coaches and intervention subjects on the functions of tele-coaching intervention in patients with intractable neurological diseases. By doing so in this study, we expected to clarify the functions and verify the efficacy of coaching intervention in patients with intractable neurological diseases. In addition, by specifying the structure of the intervention more clearly, we hoped to design a study at a higher evidence level with an enhanced quality of intervention.

### 1.3. Definition of technical terms

#### 1.3.1. Tele-coaching

Tele-coaching was defined as coaching provided through verbal communication on the phone.



### 1.3.2. Tele-coaching log

The tele-coaching log was defined as a documented record of tele-coaching content written out by a coach immediately after a tele-coaching session.

## 2. Methods

### 2.1. Study design

This study was a qualitative descriptive study using a content analysis technique. The intervention study that preceded it had followed the protocol for a randomized controlled trial. Twenty-four patients with spinocerebellar degeneration participated. During the first three months, 12 patients received tele-coaching and the 12 patients of the control group continued normal treatment without receiving tele-coaching. By this randomized controlled study, we measured the effects of the tele-coaching. As part of our ethical responsibility, the 12 patients in the control group also received the tele-coaching intervention equally. Thus, at the end of the RCT study, all 24 patients received the tele-coaching intervention.

### 2.2. Study period

The qualitative study reported here was performed from December 2005 to July 2006.

### 2.3. The tele-coaching intervention of the RCT

#### 2.3.1. Frequency and period of the tele-coaching

The tele-coaching intervention for each patient was planned to occur at a frequency of one session per week, for a course of 10 sessions. The coaches called the intervention subjects and conversed with them at dates and times previously arranged; each coach made a telephone call (tele-coaching) to assigned patients nearly every week. Each session lasted from 15 to 30 minutes. One tele-coaching course lasted for about three months. Coaches kept records (logs) of each session.

#### 2.3.2. Steps of the tele-coaching

Each course of 10 sessions went through the steps of icebreaking, pre-coaching, coaching flow, refrain, and evaluation, in that order. In addition, a series of similar steps were also prepared and implemented in each session.

#### 2.3.3. Questionnaire on the subjects' visions of themselves in two years

After the first session each subject was mailed a questionnaire with instructions to return it before the start of the second session. The questionnaire asked: "Do you have any vision of yourself two years in the future? If so, how do you see yourself?" The coaching in the second session was prepared on the basis of the questionnaire responses to the subjects' visions of themselves two years in the future.

#### 2.3.4. Qualifications of the coaches and measures to ensure intervention quality

Each patient had been coached by one of three physicians (a psychiatrist, a hematologist, or an ophthalmologist), all having practiced 19 to 21 years after graduation from medical school, having undergone coach training, and having themselves been coached by professional coaches certified by the International Coach Federation (ICF). A Certified Coach is a person who have completed a program in Japan that International Coach federation (ICF) qualifies, and passed the examination. The three coaches had experience in tele-coaching interventions and had been trained in narrative therapy techniques. Moreover, each coach was supervised or coached by two coaching experts (one an internationally accredited coach) about once a week during the tele-coaching intervention period.

There were three coaches, male physicians in their forties without specialization in the department of neurology. None were in charge of the treatment of the intervention subjects they coached.

### 2.4. Study targets: Sample and data collection

Study targets were details of the tele-coaching logs describing the tele-coaching intervention with each subject, details of the semi-structured interviews with the 3 coaches, and details of the semi-structured interviews with 9 patients who received the intervention.

#### 2.4.1. The tele-coaching logs

Logs were kept by the coaches after each session with each patient. Each session had also been audiotaped. There were data for sessions with 24 patients; thus, 24 tele-coaching logs (one log with reference to each subject/patient).

Table 1  
Attributes of the Nine Subjects of Tele-Coaching Intervention

ID	Age	Sex	Diagnosis
A	60	Female	Pure cerebellar ataxia
B	49	Male	Cortical cerebellar atrophy
C	40	Male	Spinocerebellar atrophy type 1 (SCA1)
D	65	Male	Spinocerebellar atrophy type 3 (SCA3)
E	54	Male	Olivopontocerebellar atrophy
F	55	Male	Spinocerebellar atrophy type 3 (SCA3)
G	64	Female	Cortical cerebellar atrophy
H	50	Male	Olivopontocerebellar atrophy
I	39	Female	Spinocerebellar atrophy type 6 (SCA6)

#### 2.4.2. The coaches

The three coaches participated in individually administered semi-structured interviews. We asked them mainly about the following: what was most impressive to them in the tele-coaching intervention, what technique was most effective, and what was most beneficial for the subjects. The interviews were transcribed verbatim and analyzed in that form.

#### 2.4.3. The patients

Although 24 patients received the intervention, not all were asked to participate in this study. The study protocol specified that only those deemed to be in medically stable condition and not depressed were to be invited to participate. The physicians of each patient made that determination. Ten patients were deemed eligible; one declined to participate.

We conducted semi-structured interviews with the 9 eligible and consenting patients to ask them mainly the following: what was most impressive to them in the tele-coaching intervention, what was most beneficial to them, and what was still useful to them at the time of the interview. The interviews were transcribed verbatim and analyzed in that form.

The attributes of these 9 subjects are shown in Table 1. They had an average age of 52.9 years. Most were male (66.7%), and 55.6% suffered from hereditary subtypes of spinocerebellar degeneration. The male subjects were unemployed or retired and the female subjects were full-time homemakers. The 24 subjects were 47.9 years old on average. Males (58.3%) slightly outnumbered females (41.7%) and 79.2% of the subjects suffered from hereditary subtypes of spinocerebellar degeneration.

#### 2.5. Content analysis procedure

The transcripts of interviews with 3 coaches and 9 patients and the logs for the 24 courses of tele-coaching were coded line-by-line using the coaches' actual word

to analyze and describe the coaching techniques they addressed.

We continually compared code to code in order to identify similarities and difference, and similar codes were integrated. Categories were produced and characteristics of concepts identified by repeating the classification and the integration of codes.

First, we carefully read through the tele-coaching logs to extract the characteristics of the functions of tele-coaching in each step. Next, we carefully read the data from the semi-structured interviews with the coaches and intervention subjects to extract subjective evaluations on the functions of the tele-coaching.

The results of the above analysis were integrated to study how the functions recognized as beneficial by the coaches and intervention subjects had been used in the tele-coaching processes. Our research team is experienced in qualitative analysis; co-author MK is recognized as an expert. And during the analytical work, we received supervision by another expert. The analytical work was executed by several researchers in parallel to secure the adequacy and credibility of the analytical results.

#### 2.6. Ethical considerations

Both this qualitative study and the study to which it is related, "Study on Tele-coaching Intervention: Randomized Controlled Study in Patients with Spinocerebellar Degeneration," were conducted with the approval of the Ethics Committee of Tohoku University Graduate School of Medicine obtained in fiscal 2004.

The secretariat for this qualitative study was established within St. Luke's College of Nursing. All data related to the study were kept safe in a locked depository to ensure the strict control of private information. When the candidate intervention subjects completed their consent forms during recruitment, the forms were handed directly to the study secretariat and strictly managed to ensure that the physicians in charge remained unaware of which patients had given their consent to participate in the study.

The interviews with the tele-coaching coaches and selected intervention subjects were conducted after the study secretariat had clearly explained the study objective, reviewed the ethical compliance items, and obtained the informed written consent. The tele-coaching had been recorded with the full consent of the relevant parties after they had been informed that they were allowed to refuse recording or to stop the recording in the middle of the interview.

Due consideration was also given to the handling of the verbatim transcripts of interviews as part of normal procedure and also because one coach was among the collaborators for the qualitative study. In preparing the verbatim transcripts for the analysis meeting the data were limited or abstracted by making all personal data anonymous.

### 3. Results

#### 3.1. Actual functions of the tele-coaching in each step observed in the tele-coaching logs

##### 3.1.1. Functions of the icebreaking

In general, the first and second sessions of the ten sessions were positioned as the icebreaking step. However, the number of sessions required for icebreaking varied from subject to subject, depending on their reasons for participating in the study and the degree to which they understood the coaching intervention itself.

The coaches tried to encourage the subjects to converse in a relaxing and enjoyable atmosphere. They did so by releasing the tension of the subjects through mutual self introduction and telling the subjects verbally about the efforts and advantages of the subjects. The coaches selected appropriate communication techniques to suit the subjects. For talkative subjects, for example, they listened to the subjects' stories without interrupting. For quiet subjects, they tried to pose questions that were likely to encourage the subjects to tell stories of their own.

##### 3.1.2. Functions of the pre-coaching

In general, the second to fourth of the ten sessions were positioned as the pre-coaching step. As with the icebreaking step, however, this varied from subject to subject, depending on their reasons for participating in the study and the degree to which they understood coaching intervention itself.

In choosing the topics, the coaches decided to ask the subjects how they felt about themselves at the present, in the near future, or in the remote future. Among the responses from the subjects, the coaches decided to use the answers on the subjects' visions of themselves two years in the future. Many of the subjects answered, "I know nothing about my future or myself in two years." There was considerable variation, however, in the intentions and emotions behind these responses. Some of the subjects were taken aback and told their coaches that it was "too harsh to ask a patient with a gradually

worsening disease and no hope for recovery to envision himself or herself two years in the future." Others indicated that they "consciously try not to consider the future, as the disease may worsen considerably compared to the present." Still others indicated that they "can't answer such a sudden question, never having considered what lies ahead two years in the future." Among the motivations to receive the tele-coaching intervention, the subjects commonly shared a desire to "improve my disease or quality of life."

In the pre-coaching step, the coaches began by expressing their interest in how the subjects felt about themselves at present, in the near future, or in the remote future. Next they composed and asked more questions based on the responses and traits of the subjects, and accepted the thoughts and emotions expressed by the subjects as they were. The coaches also provided the subjects with opportunities to consider their goals or desires by pointing out the subjects' own statements momentarily in conversations focused on "what they wish to do" or "what efforts they have made to do as they wish," and by deepening the questions on the topics.

##### 3.1.3. Functions of the coaching flow/refrains

In general, the fourth to ninth of the ten sessions were positioned as this step. The coaches combined techniques such as listening, questioning, acknowledging, and proposing during the tele-coaching sessions. To close each session, the coaches reviewed the contents of the coaching for the session with statements such as, "today, we talked about . . ."

In addition to encouraging the subjects to verbally express positive emotions about their own diseases and present situations, the coaches encouraged them to express negative emotions with peace of mind and calm acceptance. Though variable from person to person, most of subjects expressed negative emotions relatively more often in the former half of the course, in the fourth to sixth sessions, than in the latter half. Later, from the sixth to ninth sessions, most of the subjects made positive statements about their will to act and about changes in their perspectives and behaviors. Thus, statements and attitudes of the subjects were found to have changed from the former half to the latter half of the course.

##### 3.1.4. Functions of the evaluation

The ninth and tenth sessions of the tele-coaching course were devoted to evaluation. The coaches provided the subjects with opportunities to review the contents of the tele-coaching. The subjects were encour-

aged to talk freely about how they felt their perspectives and behaviors had changed from before the start of the tele-coaching. In response, the coaches verbally described their own findings and perspectives on the changes they observed in the subjects.

### 3.2. Evaluations of the tele-coaching functions by the coaches

#### 3.2.1. Listening closely

The coaches found, in the course of the tele-coaching, that it worked well to periodically provide subjects with the opportunity to express their own thoughts and emotions to others. By incorporating techniques such as "repeating the words of the conversational partner" and "encouraging the conversational partner to elaborate by verbal prompting with conjunctions" into the listening function, the coaches created an atmosphere in which the subjects could talk at ease. This approach was found to be useful in establishing the relationship of confidentiality so important for effective tele-coaching.

The subjects responded well to having a person other than a family member ask them with interest about themselves and how they are doing. This stands to reason, as physicians at outpatient clinics tend not to listen to topics unrelated to diagnosis, etc. I found it meaningful to listen to the female subject repeat her story word by word. Without the tele-coaching, her story might have remained untold. (Coach X)

It's important to take the viewpoint of the subject. Listening is everything. I think that close listening to the subjects was indeed useful. (Coach Z)

#### 3.2.2. Acknowledgment

The coaches felt that persistent efforts to acknowledge the subjects helped to encourage the subjects to confirm their own efforts and advantages. When their efforts were acknowledged, the subjects had the opportunity to recognize their positive impacts on others as they set their goals and took on concrete behaviors. They consciously used the following acknowledgement techniques, as they befit the scene, in order to convey appropriate acknowledgement based on their findings from close observation during the tele-coaching: The "You" stance acknowledgement where "You" is the subject of a sentence; The "I" stance acknowledgement where "I" is the subject of a sentence; and The "We" stance acknowledgement where "We" is the subject of a sentence.

I mostly used the "I message" for acknowledgement. I told the subject, for example, "I'm impressed by the way you're doing that," or, "I'm very glad you did it that way." The knack for the technique is just to use it. (Coach X)

Acknowledgement is basically very effective. When you say, "I've noticed that you're now speaking louder than before," the sentence includes an acknowledgement. One of my favorite acknowledgements is to tell the subject, "I think your behavior is always great, as long as it satisfies you." (Coach Y)

I asked the subjects about things that they were able to continue. It could be any type of activity, no matter how trivial. When they answered, I acknowledged it verbally with a statement such as, "Oh, it's great that you can still do that kind of thing." It's very effective to express acknowledgement verbally. (Coach Z)

#### 3.2.3. Encouraging the subjects to envision what the future holds in store

The coaches recognized that it was effective to ask a succession of concrete, easy-to-answer questions in a timely manner, as it befit the current communication. This inspired the subjects to see things from new perspectives and envision what might lie ahead for them in the future.

In general coaching such as coaching for business, subjects are asked to express their goals or visions by answering questions such as "What would you like to achieve?" When coaching patients with incurable diseases, I thought it would be wonderful if the subjects could come to talk about their goals or visions over shorter time frames, such as the next two to three months. (Coach Y)

Motivations expressed verbally aren't always true. Once a subject clarifies what he or she really wants to do, the later stage doesn't have much to do with what was mentioned as a motivation in the beginning. A subject won't see things from a wider perspective until his or her words and behaviors start changing. (Coach Y)

#### 3.2.4. Encouraging the subjects to recognize positive aspects and different perspectives

As the subjects considered their concrete daily behaviors in light of their own visions for the future, the coaches recognized that it worked well to acknowledge the comments of the subjects and then propose different perspectives. This coaching tactic – propos-

ing different perspectives – was intended to encourage the subjects to recognize positive aspects of both their own perspectives and different perspectives on the same phenomena. The subjects were not expected to simply agree with the proposals or to behave in accordance with them.

If you propose that a subject pursue a goal set too low (“Why don’t you try this?” or “You should do that”), the subject is likely to tell you that he has already tried and failed. But if you remind the subject by asking, “You could do this before, couldn’t you?” things will move forward little by little. In time, you’ll notice the change. (Coach Y)

I tried to encourage the subjects to start things (e.g., “In that case, why not do this?”) over a short time frame without any expectation of achievement as a long-term goal over the next two years. More specifically, I asked the subjects about their intentions during each coaching session (e.g., “What are you going to do by the next week?”). (Coach Z)

### 3.3. Evaluations of the tele-coaching functions by the intervention subjects

#### 3.3.1. Telling stories of my own in a daily-life setting

The subjects indicated that the tele-coaching gave them opportunities to be heard by others without interruption and to have conversations in a relaxed manner at home, in their daily-life environment. They felt that they had the ear of the coach, who listened attentively from the start of the session to the end without contradicting them or interposing objections.

Using the telephone helped me speak out more easily than I expected. You can sometimes talk to people better without having to see them face to face. (Subject A)

In short, the coach drew me out and made me want to talk. He listened silently and quietly to my desultory gossip. I talked on too long every session, but he never interrupted me. (Subject B)

The earnest listening of the coach somehow helped me to feel accepted. “Don’t worry,” he told me, “every story is important.” He listened silently every week and never tried to lead me on to conclusions. That simple activity – me talking, him listening – comforted me greatly. Just knowing that someone was there listening gave me peace of mind. The pace of the sessions was also good: they progressed little by little without forcing anything. The use of the phone was also convenient, as I could receive the calls at my own home. Maybe I found it relaxing to talk by voice without seeing the face of my conversation partner. (Subject I)

#### 3.3.2. Awareness of a fresh point of view

The subjects were pleased to have had the opportunity to reconsider what they wanted to do or what they would be able to do for themselves, as well as to recognize fresh points of view.

I was very negative about myself before I started the tele-coaching. I was trapped in the mindset that the disease would prevent me from doing anything. Soon after I started the tele-coaching sessions, my aspirations to do things by myself were renewed. (Subject I)

The coaching seemed to relieve me of a depressing feeling, or to push the feeling away. Now that several years have passed since I received the tele-coaching, I feel the good those interactions over the phone have done me. The experience convinced me that I should try things by myself. The tele-coaching changed my way of thinking. It convinced me that there must be things I can do. It saved me from the feeling of helplessness, of being powerless to act, because of my disease. (Subject I)

#### 3.3.3. Making a new start for something possible and continuing with it

The subjects indicated that the tele-coaching induced them to start something that was within their power to accomplish, by taking actual steps. They also found that the tele-coaching was conducive to their success in continuing their endeavors. The coaches periodically asked the subjects about their endeavors and acknowledged changes in the subjects or their efforts.

Before receiving the tele-coaching, I never tried to do much of anything. And when I did start something, I’d give it up quickly. Later, after my coaching sessions, I felt a genuine desire to act . . . I felt like I must start something, or think of a way to progress, because my coach would ask me about it again in the next week. (Subject A)

I couldn’t admonish people who cut in line in front of me. When I told my coach about this aversion of mine, he urged me to speak up in those situations. Since then I’ve been able to stand up to badly mannered people when necessary. (Subject A)

. . . My coach praised me for my efforts. He would tell me things like: “How impressive that you’re doing such a thing,” or “I find that informative and interesting”. (Subject B)

. . . I looked forward to the call from my coach on the appointed day. It encouraged me. In the hours before the call, I’d think of things I could do to

report to the coach. The tele-coaching encouraged me to act. (Subject G)

The coach taught me the actions I should take, and in what order. He gave me a concrete awareness of what I wanted to do myself, and this triggered a recovery. (Subject H)

... The coach praised me for certain things I'd done, and then he encouraged me to do more in the next week. "Why don't you do this as your next target?" he suggested. Every target he chose was more demanding than the last, but never beyond my powers to accomplish. (Subject H)

#### 4. Discussion

##### 4.1. Effective approach throughout the intervention

One function that worked effectively throughout one entire course is the function recognized by the coaches as "listening" or "acknowledgement" and recognized by the subjects as "enabling me to tell a story of my own in a daily-life setting." The coaches and subjects shared the various intense emotions experienced by the subjects throughout the ten sessions of the course, including a sense of despair, various other negative emotions, and personal identification with the disease experiences of their relatives. Characteristically, the coaches verbally expressed a strong interest in the stories of the subjects and provided positive feedback to the subjects without interposing criticisms. The subjects were thus found to exhibit positive emotions, including positive emotions in association with goals and changes, but only after expressing negative emotions about their future visions and about the difficulties of their diseases for a certain period. These findings suggested that the "listening" and "acknowledgement" techniques in tele-coaching may help to establish confidential relationships and to support/strengthen positive emotions by encouraging the subjects express negative emotions with peace of mind.

The subjective evaluations by the coaches and intervention subjects were mostly about linguistic communication. Evaluations about non-linguistic communication were limited. Given the limited specificity of communication over the phone, a medium where non-linguistic communication is difficult, this was thought to be influenced by consciously deployed tactics in linguistic communication. The voice-only mode of communication without face-to-face interaction is thought to have been effective for the study subjects with mobility impairment and dysarthria, as it was convenient and relieved feelings of tension.

##### 4.2. Effective skills at each step of tele-coaching (Table 2)

In introductory icebreaking step, the coaches seemed to use their own judgment to establish, based on the personalities of the subjects or the characteristics of communication with them, settings that would encourage the subjects to tell stories of their own with peace of mind. The functions effectively working in the ice-breaking step seem to have included a function recognized by the coaches as "listening" or "acknowledgement" and recognized by the subjects as "enabling me to tell a story of my own in a daily-life setting."

The next step, pre-coaching, seems to have included a function to encourage the subjects to set their own sights on goals or on the desires latent in themselves. This came after the coaches had time to hear about the present conditions of the subjects, including the disappointment of the subjects in their views of the future and their efforts in their present-day lives. The functions effectively working in the pre-coaching step seem to have included a function recognized by the coaches as "encouraging the subjects to become aware of the visions latent in themselves" and recognized by the subjects as "awareness of a fresh point of view."

The next step, coaching flow/refrain, seemed to help the subjects identify the positive and negative emotions in their daily behavior in light of the goals and desires they were encouraged to discover. This step was thought to have been an opportunity for the subjects to learn of diverse ways of thinking and to positively evaluate themselves. The coaches encouraged this by offering proposals on positive aspects of actual situations and issues which confronted the subjects and drew out negative emotions. The functions effectively working in the coaching flow/refrain step seem to have included a function recognized by the coaches as "listening," "acknowledgement," or "encouraging the subjects to become aware of positive aspects or different points of view," and recognized by the subjects as "making a new start towards something possible and continuing with it."

The function that worked particularly well in the last step, evaluation, seems to have been a function recognized by the coaches as "acknowledgement" and recognized by the subjects as a second "awareness of a fresh point of view." The evaluation step seems to have given the coaches and subjects the opportunity to look back at their situations before and after the tele-coaching intervention for review, and to have given the subjects the opportunity to talk about their visions for the future.

Table 2  
Effective skills at each step of tele-coaching

Step	Tele-coaching functions evaluated as effective	
	Coaches	Intervention subjects
Icebreaking	– Listening – Acknowledgement	– Enabling me to tell a story of my own in a daily-life setting
Pre-coaching	– Listening – Acknowledgement – Encouraging the subjects to become aware of the visions latent in themselves	– Enabling me to tell a story of my own in a daily-life setting – Awareness of a fresh point of view
Coaching flow/refrain	– Listening – Acknowledgement – Encouraging the subjects to become aware of positive aspects or different points of view	– Enabling me to tell a story of my own in a daily-life setting – Encouraging me to make a new start towards something possible and to continue with it
Evaluation	– Listening – Acknowledgement	– Enabling me to tell a story of my own in a daily-life setting – Awareness of a fresh point of view

#### 4.3. Comparisons with findings from the United States and Europe

Tele-coaching has been reported to be useful in the behavior management of patients with cancer and cardiac diseases in the United States and Europe. Sacco et al. studied 10 subjects with type I diabetes mellitus (aged from 18 to 50 years old) divided into two groups, an intervention group of five subjects and a control group of five subjects. After providing telephone coaching sessions of 15-minutes to the intervention group once per week or once per fortnight for 6 months, they observed a 1.2% decrease of HbA1c in the intervention group and a 0.8% increase of HbA1c in the control group [12]. Vale et al. divided a population of 245 patients hospitalized for treatment of coronary artery diseases into two groups, an intervention group consisting of 121 subjects who underwent five sessions of telephone coaching in five successive 6-month periods, and a control group of 124 subjects who received no telephone coaching. The total cholesterol value and low density lipoprotein-cholesterol value were found to be significantly lower in the intervention group than in the control group at the end of the study. This proved that coaching was as efficacious as or more efficacious than hyperlipidemia therapy alone. Vale's group insisted that the efficacy of coaching could be explained by compliance with the drug therapy and advice on diet [18]. Later, the same group expanded their study by providing a similar coaching program to 398 patients hospitalized for coronary artery disease and comparing their progress with that of 394 control subjects treated by the usual medical management alone. The coaching was provided by nutritionists or coaches over the phone in combination with software and e-mail. As a result, Vale's group reported that the total cholesterol value, a risk factor for recurrence of coronary artery

diseases, decreased significantly more in the coaching intervention group (by 21 mg/dL) than in the controls (by 7 mg/dL) [19]. In a study by Lynch et al., 17 subjects with melancholia (aged 60 or older) treated by dialectic behavior therapy (a 2-hour group therapy and a 30-minute telephone coaching session every week for 28 weeks) together with the ordinary treatment showed improvement in the self-administered depression scale, whereas a control group of 17 subjects who received only the ordinary treatment showed no improvement whatsoever [7]. Oliver et al. divided a population of 77 subjects (18 to 75 years old) with moderate cancer pain for 2 weeks or longer into two groups, an intervention group of 34 subjects and a control group of 33 subjects. Two weeks after receiving 20-minute education and coaching sessions through individual interviews, the patients in the intervention group reported improvement in pain severity [9].

Taken in sum, these earlier reports indicate that patients who received coaching in addition to conventional treatments showed better results in blood sugar control, blood cholesterol levels, depression, and pain index, respectively, than groups treated with the conventional treatments alone. The various methods of coaching range from periodical telephone calls from grad students in psychology departments to group classes. The findings of the above studies suggest that coaching may promote self-discipline, drug compliance, communication with physicians, consent to treatment regimen, and self-efficacy.

Few studies have revealed the impact of tele-coaching on patients with intractable diseases, including intractable neurological diseases. According to the analysis in this study, however, the intervention subjects felt, in their subjective evaluations, that the tele-coaching enabled them to tell their own stories in a daily-life setting, encouraged them to experience and

adopt fresh points of view, and helped them start working towards attainable goals without giving up. Our results indicate that it was especially important to help patients with intractable diseases to become aware of goals and desires latent in themselves before preceding to the next coaching step of "planning and working towards goals" – a conventional step in coaching for business and in other fields. The time frame for coaching may be extended in the future, when so required for the treatment of the medical and mental conditions of the subjects.

#### 4.4. Limitations of the study and future issues

To cite one limitation in this study, no steps were taken to analyze whether factors such as gender, age, progress, prognosis, stress during the tele-coaching period, or differences between hereditary and non-hereditary diseases influenced the tele-coaching process. Further analyses in the future will need to account for these factors. Moreover, because this study was conducted by Japanese researchers with Japanese patients, comparative studies will be required to discover whether results are more explained by culture or by patient characteristics, including diagnosis. We should also note that the extracted functions rated as beneficial in the subjective evaluations of the coaches and subjects were not necessarily evaluated as beneficial by all of the intervention subjects. Given that subjective evaluations for benefits vary among individuals, additional research may indicate what benefits patients hope to receive from tele-coaching as well as which patients are most likely to benefit from it.

The criteria, tools, and human resources for managing the diverse ethical issues in the treatment of patients with intractable neurological diseases are still limited. To develop and disseminate tele-coaching as a communication intervention method for maintaining and improving the quality of life of patients with intractable neurological diseases, it will be necessary to accumulate more and better information on tele-coaching techniques and to verify their efficacy.

## 5. Conclusion

In this study, the subjects with mobility impairment and dysarthria were thought to benefit from the voice-only mode of communication without face-to-face interaction, as the communication was less stressful and could take place in the convenience of their own homes.

One function that worked effectively throughout one entire course was the function recognized by the coaches as "listening" or "acknowledgement" and recognized by the subjects as "enabling me to tell a story of my own in a daily-life setting." The subjects were found to exhibit positive emotions, including positive emotions in association with goals and changes, but only after expressing negative emotions about their future visions and about the difficulties of their diseases for a certain period. These findings suggested that the "listening" and "acknowledgement" techniques in tele-coaching may help to establish confidential relationships and to support/strengthen positive emotions by encouraging the subjects express negative emotions with peace of mind.

Few studies have revealed the impact of tele-coaching on patients with intractable diseases, including intractable neurological diseases. According to the analysis in this study, however, the intervention subjects felt, in their subjective evaluations, that the tele-coaching enabled them to tell their own stories in a daily-life setting, encouraged them to experience and adopt fresh points of view, and helped them to start working towards attainable goals without giving up. Our results indicate that it was especially important to encourage patients with intractable diseases to become aware of goals and desires latent in themselves before preceding to the next coaching step of "planning and working towards goals" – a conventional step in coaching for business and in other fields. The time frames for coaching may be extended in the future, when so required for the treatment of the medical and mental conditions of the subjects.

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## References

- [1] T. Dowd, K. Kolcaba and R. Steiner, The addition of coaching to cognitive strategies: intervention for persons with compromised urinary bladder syndrome, *J Wound Ostomy Continence Nurs* 30 (2003), 90–99.



- [2] A. Egner, V.L. Phillips, R. Vora and E. Wiggers, Depression, fatigue, and health-related quality of life among people with advanced multiple sclerosis: Results from an exploratory telerehabilitation study, *NeuroRehabilitation* **18** (2003), 125–133.
- [3] A.L. Estey, M.H. Tan and K. Mann, Follow-up intervention: its effect on compliance behavior to a diabetes regimen, *Diabetes Educator* **16** (1990), 291–295.
- [4] N. Hirono, A. Yamadori, M. Kameyama, T. Mezaki and K. Abe, Spinocerebellar degeneration (SCD): cognitive disturbances, *Acta Neurol Scand* **84** (1991), 226–230.
- [5] T. Iizuka, Y. Ogata, M. Minowa and T. Fujita, A follow-up study on effects of ADL deterioration on QOL in patients with neurological intractable diseases, *Nippon Koshu Eisei Zasshi* **46** (1999), 595–603.
- [6] P. Langhorne et al., Early supported discharge services for stroke patients: a meta-analysis of individual patients' data, *Lancet* **365** (2005), 501–506.
- [7] T.R. Lynch, J.Q. Morse, T. Mendelson and C.J. Robins, Dialectical behavior therapy for depressed older adults, *Am J Geriatr Psychiatry* **11** (2003), 33–45.
- [8] C.M. McBride and B.K. Rimer, Using the telephone to improve health behavior and health service delivery, *Patient Education and Counseling* **37** (1999), 30–18.
- [9] J.W. Oliver, R.L. Kravitz, S.H. Kaplan and F.J. Meyers, Individualized patient education and coaching to improve pain control among cancer outpatients, *J Clin Oncol* **19** (2001), 2206–2212.
- [10] J.H. Ricker, M. Rosenthal, E. Garay, J. DeLuca, A. Germain, K. Abraham-Fuchs and K.U. Schmidt, Telerehabilitation needs: a survey of persons with acquired brain injury, *J Head Trauma Rehabil* **17** (2002), 242–250.
- [11] J.D. Piette, M. Weinberger, S.J. McPhee, C.A. Mah, F.B. Kraemer and L.M. Crapo, Do automated calls with nurse follow-up improve self-care and glycemic control among vulnerable patients with diabetes? *American Journal of Medicine* **108** (2000), 20–27.
- [12] W.P. Sacco, A.D. Morrison and J.I. Malone, A brief, regular, proactive telephone "coaching" intervention for diabetes. Rationale, description, and preliminary results, *J Diabetes Complications* **18** (2004), 113–118.
- [13] L. Savard, A. Borstad, J. Tkachuk, D. Lauderdale and B. Conroy, Telerehabilitation consultations for clients with neurologic diagnoses: Cases from rural Minnesota and American Samoa, *NeuroRehabilitation* **18** (2003), 93–102.
- [14] S.-I. Izumi, K. Ando, M. Ono, Y. Suzukamo, A. Michimata and S. Fukuhara, Effect of coaching on psychological adjustment in patients with spinocerebellar degeneration: A pilot study, *Clinical Rehabilitation*, in press.
- [15] A. Steptoe, A. Mohabir, N.G. Mahon and W.J. McKenna, Health related quality of life and psychological wellbeing in patients with dilated cardiomyopathy, *Heart* **83** (2000), 645–650.
- [16] Y. Suzukamo, S. Ohbu, T. Kondo, J. Kohmoto and S. Fukuhara, Psychological adjustment has a greater effect on health-related quality of life than on severity of disease in Parkinson's disease, *Mov Disord* **Mar 1** (2006), Epub ahead of print.
- [17] The ICF CODE OF ETHICS. Available from: Hyperlink URL: <http://www.coachfederation.org/eweb/DynamicPage.aspx?Site=ICF&WebKey=3087def4-f88f-4426-9cc6-ca692c4a900c> (cited 2005 October 26).
- [18] M.J. Vale, M.V. Jelinek, J.D. Best and J.D. Santamaria, Coaching patients with coronary heart diseases to achieve the target cholesterol: A method to bridge the gap between evidence-based medicine and the "real world" – randomized controlled trial, *J Clin Epidemiol* **55** (2002), 245–252.
- [19] M.J. Vale, M.V. Jelinek, J.D. Best, A.M. Dart, L.E. Grigg, D.L. Hare, B.P. Ho, R.W. Newman and J.J. McNeil, Coaching patients on achieving cardiovascular health (COACH). A multicenter randomized trial in patients with coronary heart disease, *Arch Intern Med* **163** (2003), 2775–2783.
- [20] L. Von Koch, L.W. Holmqvist, A.W. Wottrich, K. Tham and J. de Pedro-Cuesta, Rehabilitation at home after stroke: a descriptive study of an individualized intervention, *Clinical Rehabilitation* **14** (2000), 574–583.
- [21] M. Weinberger, M.S. Kirkman, G.P. Samsa, E.A. Shortliffe, P.B. Landsman, P.A. Cowper, D.L. Simel and J.R. Feussner, A nurse coordinated intervention for primary care patients with non-insulin-dependent diabetes mellitus: impact on glycemic control and health-related quality of life, *Journal of General Internal Medicine* **10** (1995), 59–66.
- [22] W.L. Whitlock, A. Brown, K. Moore, H. Pavliscsak, A. Dingbaum, D. Laceyfield, K. Buker and S. Xenakis, Telemedicine improved diabetic management, *Military Medicine* **165** (2000), 579–584.

## ●介入研究(臨床試験)

## コーチング技術を応用した神経難病患者に対する心理社会的介入

Psychosocial intervention using coaching skills for patients with neurodegenerative diseases

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神経難病はその多くは進行性であり、有効な治療法が少なく、徐々に身体機能の障害をきたす。また、行動が制限されて廃用症候群や心理的問題など、二次的な障害が発生することが少なくない。このような疾患においては、患者が無力感を克服して行動の自由が確保できるように援助することが求められる。一方、コーチングとは、相手の自発的な行動を促進するコミュニケーションの技術である。本研究では、身近動作には自立した脊髄小脳変性症患者を対象として、1回15~30分間、ほぼ週1回の頻度で全10回かかる電話によるコーチング介入を実施した。その結果、介入群は対照群よりも自己効力感(自分には必要なことを実行できる力があるという信念)の高まること示された。今後はさらに有効性を確かめるための大規模な臨床研究、および有効性の機序を明らかにするための質的研究、さらにコーチング技術の医療への応用を習得する方策の確立が必要である。

## Keywords

コーチング, 脊髄小脳変性症, 遠隔医療, 自己効力感(self efficacy), 物語に基づく医療(narrative-based medicine)



## 非薬物的介入としてのコーチング

## 1. 神経難病とQOL

難治性疾患の患者や家族は疾病とその子後についての不安のみならず、症状や障害が長期化、重度化するに伴って、経済的な問題や生活・将来についての不安など、多くの問題を抱えることとなる。このような難治性疾患においては治療法の開発を進めるだけでなく、患者のQOLの向上をはかることが重要であり、限られた範囲ではあるが、患者がコントロール能力を回復し無力感を克服して行動の自由が確保できるように援助することが求められる。

神経難病はその多くは進行性であり、有効な治療法が少なく、徐々に身体機能の障害をきたす。筋萎縮性側索硬化症、脊髄小脳変性症、Parkinson病、多発性硬化症などがあるが、神経症状から行動が制限されて廃用症候群や心理的問題など、二

次的な障害が発生することが少なくない。実際、Parkinson病患者の健康関連QOL(HRQOL)を調査した研究では、心理的適応が疾患の重症度よりもHRQOLと強く相関したことが示されている<sup>1)</sup>。したがって、心理的適応を促進することができれば、これら神経難病患者のHRQOLを高めることにつながる可能性がある。

## 2. コーチングとは

“コーチング”は“相手の自発的な行動を促進するコミュニケーションの技術”と定義され、1980年代にアメリカでスポーツ、ビジネス、教育、個人的成長などの分野に導入されて大きな成果を発揮したコミュニケーション形態である。

コーチングはおもに定期的な会話を通して進められる。それぞれのセッションでコーチは、聞く、質問する、承認を与える、提案する、などの会話スキルを用いながら、つぎの6つのステップを通してクライアントが望む状態に最短の時間で到達できるように援助する。すなわち、①ラポールの

形成, ②目標の設定, ③現状の把握, ④目標と現状のギャップ(能力, 道具, 環境などの不足や脆弱性)の明確化, ⑤ギャップを埋めるために必要な行動の計画, ⑥行動の結果や経過のフォローを行い, 以上のプロセスをコーチングフローとよぶ。また, コーチングは会話だけで行うのではなく, コーチはインベントリーやメールなどの道具を必要に応じて, そしてクライアントのコミュニケーションスタイルに合わせて柔軟に使用する。

コーチングにおける会話には, interactive, on-going, tailor-made という3つの特徴がある。会話はおもにクライアントが話し, コーチが聴くという形で進められるが, コーチは上述のように質問, 提案, 要望などを適宜行う。このときコーチとクライアントは対等であることが前提となる。また, “いま, ここで”のコミュニケーションを扱い, 目標やその達成度も個別に設定され, 評価される。

### 3. 医療とコーチング

文献を検索できた範囲で, 医学誌に介入方法としての“コーチング”が登場したのは1990年代後半である。日本でも杏林大学の柳澤らはコーチングと同様の手法を用いたLife-style Improvement Program (LIP)を心筋梗塞後の患者に行い, 狭心症発作の減少などを認めた<sup>2)</sup>。

コーチングを用いた研究として, これまでに糖尿病, 高脂血症, 癌性疼痛などでの論文がある。Saccoら<sup>3)</sup>は, 18~50歳の1型糖尿病患者10人を介入群5人と対照群5人に分け, 介入群には1~2週間に1回15分間の電話によるコーチングを6カ月間にわたって行った結果, HbA<sub>1c</sub>が介入群で1.2%減少したのに対して, 対照群では0.8%増大したと報告した。Valeら<sup>4)</sup>は, 冠動脈疾患の治療で入院した患者245人を介入群121人と対照群124人に分け, 介入群に対しては6週間ごとに電話によるコーチングを計5回行った。その結果, 介入群で総コレステロール値とLDL-コレステロール値が対照群よりも統計的に有意に低く, コーチングを受けることは高脂血症治療薬と同等の効果を有した。同グループはさらに研究を拡大

し, 上記と同様のコーチングプログラムを冠動脈疾患で入院した患者398人に行い, 対照群394人と比較した。その結果, 介入群では冠動脈疾患再発の危険因子である総コレステロール値が21 mg/dl 減少したのに対して, 対照群では7 mg/dl の減少にとどまったと報告している<sup>5)</sup>。Oliverら<sup>6)</sup>は, 18~75歳で2週間以上中等度の癌性疼痛を有する患者77人を介入群34人と対照群33人に分け, 介入群には20分間の個別面談による教育とコーチングを行った結果, 2週間後の疼痛重症度が介入群で改善していたと報告した。

以上をまとめると, コーチングを使うことにより通常の診療だけの場合よりも, それぞれ血糖・脂質のコントロールや, 疼痛尺度の結果が良好であったと記載されている。有効性の機序として, これらの論文では自己管理の促進, 服薬の遵守, 医師との意思疎通, 治療方針の合意, そして自己効力感の向上などが考えられるとしているが, 証明されてはいない。また, コーチングが難治性疾患患者に与える影響を明らかにした研究はなかった。

そこで著者らは, 神経難病患者に対するコーチングの有効性を検討するパイロット研究として, 脊髄小脳変性症患者に対する電話によるコーチング(テレコーチング)介入が患者の心理的適応やHRQOLに与える影響を検討した<sup>7)</sup>ので, その概略を紹介する。なお, これまでの報告ではコーチングの構造がかならずしも明記されておらず, また医療上のアドバイスを行うなど, coaching というよりはteachingの要素が含まれていたが, 本研究では医療上のアドバイスは行わないことを対象者と合意してコーチングが行われた。

## ● 脊髄小脳変性症患者へのコーチング介入効果——ランダム化比較試験

### 1. 対象

脊髄小脳変性症患者24人, 介入群, 対照群それぞれ12人とした。選択基準として神経内科外来に通院し, 脊髄小脳変性症の確定診断後半年以上経



図1 電話によるコーチングの実際  
コーチはヘッドセットを着け、キーボードで会話内容を同時に、あるいはセッション後に入力した。

過している20～65歳の患者で、身辺動作はほぼ自立し、認知機能障害や精神疾患がなく、テレコーチングを希望するものとした。本研究は東北大学大学院医学系研究科倫理委員会の承認を受け、すべての参加者から文書による同意を得た。

## 2. 方法

介入方法は3カ月間、全10回、1回15～30分間の電話によるコーチングとした(図1)。3名のコーチ経験保有医師がコーチを担当した。各対象者をひとりのコーチが担当した。また、介入の質を均一に保つために週1回、15～30分のコーチ間電話会議をもった。アウトカムはHRQOL尺度であるSF-36日本語版<sup>8)</sup>と、疾患への心理適応の尺度であるNottingham Adjustment Scale日本語版(NAS-J)<sup>9)</sup>を用いた。副次的尺度として、日常の身辺動作の自立度尺度であるBarthel Indexを評価した。表1に本研究におけるコーチングの実施要領を示す。

対象は介入群または対照群にランダムに割り付けられた。介入群には3カ月間のコーチングを行い、対照群には3カ月間の待機後に、3カ月間のコーチングを行った。コーチングあるいは待機の直前と直後に評価を行った(図2)。

## 3. 結果

25人がエントリーし、1人が脱落した。脱落理由は、疾患の進行により受話器を15分以上もち

続けることが困難になったためであった。24人で所定のコーチングセッションが行われ、データ回収率は100%、事前連絡なしのコーチング実施不能は0%であった。表2に参加者の属性を示す。介入群と待機(対照)群との間に性、年齢、診断名の差はみられなかった。ベースラインのHRQOLは、国民標準値と比較して全体的に低いQOLを示した。とくに身体機能、日常役割機能(身体)、全体的健康感が1SD以上低い得点を示した。一方、体の痛み、活力、心の健康は国民標準値とほとんど変わらなかった(表3)。

介入群と対照群のSF-36、NAS-Jのベースライン得点に統計学的有意差はみられなかった。

分散分析で、期間の効果、群の効果、交互作用の検定を行った結果、“活力”、“不安・うつ”、“ローカスオブコントロール”に有意な期間の効果がみられた。これは、介入群も対照群も3カ月後に有意に得点が高くなったことを示している。群の効果、交互作用効果はみられなかった。

つぎに性、年齢、ベースラインの得点を共変量として共分散分析を行い、介入群と対照群の3カ月後の推定平均値を求めた。その結果、介入群は対照群と比較して“自己効力感”(自分には必要なことを実行できる力があると感じる程度)が有意に高かった( $p=0.037$ )。その他の下位項目には、両群間に有意差はみられなかった。

Barthel Indexはベースラインも3カ月後も介入群と対照群との間に差はなく、それぞれの群でベースラインと3カ月後との間に差はみられなかった。

対象者のひとりには、コーチング後に介護保険請求代行サービス会社を設立した。3カ月間のコーチング期間中に思い立ち、計画を立て、コーチング後に通信教育を受けて市場調査を行い、コーチング終了半年後に営業を開始した。この患者は“コーチングのおかげで情報にアンテナを立て、行動に移すことができた”と述べている。

## 4. 考察

構造化されたコーチングは“自己効力感”を高めると示唆された。また、介入・待機にかかわら