

## Case Report

# Vocational Rehabilitation Support for a Patient with Cognitive Dysfunction after Stroke

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## ABSTRACT

We describe the successful vocational rehabilitation of a woman with cognitive dysfunction after left-sided caudate hemorrhage. Previous reports have suggested that returning to work after a stroke is easier for white-collar workers than for blue-collar workers in Japan. Our patient had frontal lobe dysfunction. We had difficulty helping her return to work but could support her return to her former managerial job. Appropriate rehabilitation, social support, and cooperative negotiations are beneficial for patients with cognitive dysfunction who are attempting to return to society.

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Key words: cognitive dysfunction, stroke, vocational rehabilitation, positive behavioral support

## INTRODUCTION

In Japan the incidence of stroke and mortality due to stroke decreased until the 1990s. However, the rapid aging of the Japanese population has increased the estimated prevalence of stroke. Returning to work after stroke has recently become more important as a stroke-related outcome<sup>1</sup>. Unfortunately, the productivity of patients with cognitive dysfunction after stroke has not received much attention in Japan. In particular, the relationship between neuropsychological assessment and productivity outcome after stroke has not been investigated. Saeki et al<sup>2</sup> have reported that significant predictors of a return to work after stroke are the absence of muscle weakness, the absence of apraxia, and a white-collar

occupation. Despite the economic cost of lost employment, however, few studies have examined the return to work after stroke. The reported percentages of patients who return to work after stroke range from 11% to 85%. Marcella et al have suggested that directions for future studies of returning to work are needed<sup>3</sup>. We report on a patient with cognitive dysfunction after stroke who returned to white-collar work (managerial job).

## CASE REPORT

A 40-year-old woman who worked for a securities company was admitted to our hospital with coma, right hemiplegia and aphasia. The level of consciousness was classified as II-1 with the Japanese

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metic : 9 ; comprehension : 6 ; similarities : 9.

Performance subtests :

Picture completion : 11 ; picture arrangement : 11 ;  
block design : 11 ; object assembly : 7 ; digit symbol :  
7.

II. Trail Making Test A : 83 seconds ; Trail Making  
Test B : 123 seconds.

III. Paced Auditory Serial Addition Task : 30

IV. Wechsler Memory Scale-Revised : General  
memory : 66 ; verbal memory : 68 ; visual memory :  
76 ; attention and concentration : 97 ; Delayed Recall  
Row : 74

V. Controlled Word Association Test : 17 words.

VI. Wisconsin Card Sorting Test Keio Version :  
STEP 1 Category achieved : 3/6 ; Perseverative  
errors of Nelson : 2 ; Difficulty maintaining set : 2  
STEP 2 Category achieved : 5/6 ; Perseverative  
errors of Nelson : 2, Difficulty maintaining set : 0

### ADL

ADLs and gait were almost completely independent.

### Speech dysfunction

Speech dysfunction was not shown by the results of the Japanese Standard Language Test of Aphasia ; all items showed full function. Daily speech and explaining were normal, but the patient had difficulty retaining memories of listening, images of words, and

written *kana*.

### Cognitive dysfunction

The patient had problems with sustained and alternating attention ability and neurofatigue. She also had disturbances of memory and executive function. Memory performance was better with visual information than with auditory information. Because of the neurofatigue, she was extremely tired with slow reactions while performing ADLs. Although she could live independently in daily life, we believe she would have some problems working. However, we did not perform neuropsychological tests after treatment because the interval was too short to evaluate a learning effect.

### Vocational rehabilitation

Table 1 shows a summary of each session and the role of each member of the rehabilitation team at Kanagawa Rehabilitation Hospital<sup>4</sup>. Social-skill training by a clinical psychologist and speech therapist was designed to improve interpersonal communication skills and malleability. Cognitive exercises were designed to ameliorate difficulties in : initiating purposeful activities or ideas ; controlling impulsive behaviors ; focusing attention and sustaining concentration for required durations ; effectively processing visual-perceptual and spatial-motor information ; and higher-level reasoning function. Trail making

Table 1. Content of outpatient rehabilitation program and roles of rehabilitation team members<sup>4</sup>

Role	Content of each session
Doctor and nurse	Health consultation, medical examination, Explanation of disorders
Social worker	Consultation about provision of medical care, co-ordination with community and businesses
Clinical Psychologist/speech therapist	Social skill training
Vocational rehabilitation counselor	Evaluation of vocation ability, gardening therapy, role play
Physical therapist	Assessment and application of physical ability
Rehabilitation gymnastic trainer	Various sports
Occupational therapist	Occupational therapy
Welfare facility life advisor	Provision of social resources, cooking therapy, planning and execution of hiking
All staff member	Regular conference with patient/family, visiting welfare facilities

Fig. 3. Diagnosis document to the company for the patient's return to work

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To whom it may concern :

I am writing this on behalf of the patient born on August 17, 1964, a Japanese lady. I have known her since April 2005 when she was admitted to the Jikei University Hospital for treatment of cerebral hemorrhage. According to her request I will describe her medical and functional status as follows.

1. Onset and Course :

She had left-sided cerebral hemorrhage side and came to our hospital on April 4, 2005. At the time of admission, she could not stand or walk well.

Her physical condition stabilized after medical and functional treatment. She became independent physically in activities of daily life and mobility.

However, she has cognitive problems as sequelae of the cerebral hemorrhage.

2. Functional Status :

Her cognitive problems are as follows.

Neurofatigue : She has a tendency to run out of mental energy.

Memory disturbance : Her memory performance is better with visual information than hearing one with auditory information. Although she can live independently in daily life, she may have some trouble working.

3. General health status :

Her general health status has been good lately. However she requires medical follow-up to maintain her present good health. Anyway, I think that it is better for her to return to work slowly according to her health status. Sincerely yours,

August 8, 2005

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and cancellation tasks were for attention-process training. The patient also trained with such office software programs as Microsoft Word and Excel.

To help the patient return to her job we assessed cognitive functions with neuropsychological testing and performed cognitive rehabilitation. After she was discharged from the Kanagawa Rehabilitation Hospital 111 days after the stroke, we sent a diagnosis document to her company so that she could return to work (Fig. 3).

We thought that the patient would have trouble returning to her former job if no changes were made. For this reason we suggested that her company arrange a suitable job for her. We negotiated with her company about her job problem. She finally returned to work at her former employer 133 days after the stroke.

## DISCUSSION

Because our patient could walk and was almost independent in ADL upon discharge, her problems were not readily apparent. However, neuropsychological testing showed higher cortical dysfunction

of the frontal lobe due to cerebral hemorrhage. Recognizing hidden dysfunction is a difficult problem in vocational rehabilitation support. Saeki et al have reported that white-collar workers find it easier to return to work after stroke than do blue-collar workers and that 63.2% of white-collar workers can return to a managerial or administrative position. However, if a patient has cognitive dysfunction of the frontal lobe and encounters difficulty in returning to a managerial job, we believe that appropriate rehabilitation, social support, and cooperative negotiation are beneficial.

Before these procedures can be carried out, a facility where neuropsychological dysfunction after acquired brain injury can be assessed by experts is necessary. Also needed is a facility where the appropriate vocational rehabilitation can be provided. In Japan, however, there are few resources, such as welfare facilities for social rehabilitation. When a social rehabilitation facility is available, young patients with acquired brain injury tend to dislike it and would rather receive training or treatment at a hospital because they hope their impairment can be cured. Inevitably, outpatient treatment with conven-

tional physical therapy or occupational therapy is often continued individually. In such cases, however, no system is available to coordinate problems inherent in returning to work or school over the long term or to support patients when the return to work or school becomes difficult. Thus, these patients spend their days in idleness. However, we could quickly provide support to our patient with cognitive dysfunction through cooperation between The Jikei University Hospital, Kanagawa Rehabilitation Hospital, and her employer.

Positive behavioral support<sup>5</sup> have been recommended as a type of cognitive rehabilitation for patients with acquired brain injuries. In our patient such positive behavioral support was considered extremely important for vocational rehabilitation after stroke. Our patient with frontal lobe dysfunction was able to return to her former managerial job. However, the problems of returning to work after a stroke causing cognitive dysfunction have not been sufficiently studied in Japan. If the patient had not received appropriate vocational rehabilitation, she might not have gained the trust of her employer or her colleagues. Patients with acquired brain injuries and cognitive dysfunction sometimes have difficulty returning to a former job. To achieve successful rehabilitation, careful support should be provided for these impairments. However, coordinating such support is difficult without educating the patients' colleagues.

For example, neurofatigue and inattention might look like clouding of consciousness, lack of motivation, or selfishness to families or coworkers. Such misunderstanding of the impairment could cause vocational support to fail. Therefore, we believe our quick and appropriate communication with the patient's employer helped her return to society.

In the future, we expect communication to improve among acute-phase hospitals, subacute-phase rehabilitation hospitals, and patients' employers in Japan.

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