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Review Article: Palliative Care

Importance of Rehabilitation in Cancer Treatment and Palliative Medicine

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Although rehabilitation for cancer patients is being practiced in clinical settings, it has not been very well recognized in cancer care. However, interest has been turning to cancer rehabilitation in recent years in association with advances in palliative care and the increasing numbers of patients who survive for long periods, while enduring symptoms caused by cancer or adverse effects associated with treatment. The fact that cancer patient rehabilitation fees were newly established in the 2010 revision of the Japanese medical service fees has propelled interest in this topic. Rehabilitation can be applied throughout the entire phase from the time of diagnosis to the terminal stage, and it is an approach that can involve psychosocial aspects as well as physical aspects. Although its effectiveness has not been adequately demonstrated, especially in the area of palliative medicine, rehabilitation for cancer patients is expected to be an important means of supporting the hopes of patients and their families, and attempting to maintain and improve patients' quality of life.

Key words: ADL – QOL – rehabilitation

INTRODUCTION

Advances in treatment techniques have been associated with increases in cancer patient survival rates, and the numbers of long-term cancer survivors have been rising. Nevertheless, many cancer patients experience impairments in everyday living as a result of adverse effects or sequelae associated with treatment or as they reach the terminal stage of their disease. Rehabilitation may play a role as one approach to maintaining and improving the quality of life (QOL) of such cancer patients.

Approaches to cancer patient rehabilitation that take both psychosocial aspects and physical aspects into consideration are important, based on 'adequately understanding the strong connections between the patients' physical, psychological and social aspects (1)'. Thus, the involvement of representatives of a variety of occupations, including psychologists, clinical psychologists and nurses, and not just such rehabilitation specialists such as physical therapists, occupational therapists or speech therapists is important for the rehabilitation of cancer patients; thus, a multidisciplinary team care is required. However, not many reports on the rehabilitation of cancer patients have appeared since the comprehensive research reports on the need for rehabilitation were first published by Lehmann et al. (2) and by Harvey et al. (3) in 1982. One reason for this lack of research is that as rehabilitation was originally performed mainly for the purpose of improving and raising the level of activities of daily living (ADL), there has been little demand from either healthcare providers or patients for proactive intervention in cancer care with regard to rehabilitation, which has had a strong image of being intended to improve ADL and return patients to their former lives. In recent years, however, interest has turned to the association between cancer rehabilitation and the increasing numbers of patients who survive for long periods, while enduring symptoms caused by cancer or the adverse effects associated with treatment or the association with advances in palliative care.

Dietz (4) has classified cancer rehabilitation according to cancer patients' physical and individual needs into four

categories: preventive, restorative, supportive and palliative (Table 1). Based on these categories, the effectiveness of rehabilitation has been reported for each stage of cancer treatment, from physical rehabilitation during the acute stage of treatment (5–8) to the rehabilitation of physical aspects and psychological aspects during the terminal stage (9–12), but it remains difficult to claim that cancer rehabilitation is generally acknowledged adequately. In view of these situations, Dietz (13) has pointed out that it will be necessary to focus on a concept of care that asks, 'What is the best support that can be provided to enable cancer patients to readapt to society', and DeLisa (14) has stated that 'now that cancer patients' survival rate has increased, attention should be turned to maintaining cancer patients' QOL and prolonging it'. In other words, a shift to an approach that aims to maintain the QOL of patients at a high level and not just improve their function and prognosis has become necessary.

On the other hand, the recognition or practice of rehabilitation in the cancer area is not adequate. In this article, I will first outline the rehabilitation that is performed during each phase and the points to bear in mind while performing such rehabilitation. Next, I will report on rehabilitation needs, then on the current state of affairs with regard to cancer rehabilitation in Japan, including the results of our own research. Finally, I will describe the current problems and perspectives regarding rehabilitation for cancer patients.

REHABILITATION DURING EACH PHASE

The areas in which rehabilitation can be applied during the various phases of disease have been summarized in a table (Table 2) (15). Below, I have summarized the kinds of rehabilitation that are performed during each phase as well as some points to bear in mind.

Rehabilitation Before and After Surgical Treatment

First, promoting early postoperative ambulation and improving physical functions so that patients can return as closely as possible to their lives before surgery is a goal common to rehabilitation for all diseases. During this phase, many patients have just started treatment, and rehabilitation should be conducted with sufficient consideration of the fact that many patients have a tendency to become psychologically depressed during this phase as a result of their 'cancer' diagnosis or changes in their body image as a result of surgery. When performing rehabilitation, it is important to first determine how a patient's disease has been explained to him or her and how the patient perceives his or her disease. In addition, determining what issues patients and their families are concerned about at present and with regard to their future makes it possible to provide them with information to allay their concerns.

Now that the length of hospital stays in Japan has been shortened, the time available to conduct inpatient rehabilitation has also been limited. Thus, some problems may arise, while the patients are going about their daily lives after their discharge from hospital that were not recognized, while the patients were hospitalized. Patients often spend the next several years being concerned about recurrence, and another role of rehabilitation is to provide patients with a place to go for consultation when they have concerns after being discharged.

Rehabilitation During Chemotherapy

Physical strength tends to diminish during chemotherapy as a result of the adverse effects, such as nausea/vomiting, myelosuppression or peripheral neuropathies. Rehabilitation aims to encourage ambulation consistent with the patient's condition even during chemotherapy and to prevent disuse

Table 1. Classification of cancer rehabilitation

(1) Preventive rehabilitation
Starts soon after cancer has been diagnosed. Performed before or immediately after surgery, radiotherapy or chemotherapy. No impairments of function present yet. Preventing impairments is the purpose of the rehabilitation measures
(2) Restorative rehabilitation
Aims for the maximal recovery of function in patients with remaining function and ability Attempts to achieve maximal functional recovery in patients who have impairments of function and decreased abilities
(3) Supportive rehabilitation
Increases self-care ability and mobility using methods that are effective (e.g. guidance with regard to self-help devices, self-care and more skillful ways of doing things) for patients whose cancer has been growing and whose impairments of function and declining abilities have been progressing. Also includes preventing disuse, such as contractures, muscle atrophy, loss of muscle strength and decubitus
(4) Palliative rehabilitation
Enables patients in the terminal stage to lead a high QOL physically, psychologically and socially, while respecting their wishes. Designed to relieve symptoms, such as pain, dyspnea and edema and to prevent contractures and decubitus using heat, low-frequency therapy, positioning, breathing assistance, relaxation or the use of assistive devices

Quoted from ref. no. 4.

Table 2. Possible contributions of rehabilitation in the various phases of the disease

Phase of disease	Possible contributions of rehabilitation
I. Treatment	1. Evaluating the effects of treatments on function
	2. Preserving and restoring function through exercise, edema management and increased activity
	3. Controlling pain using heat, cold and transcutaneous electrical nerve stimulation
II. Posttreatment	1. Developing and supporting a program to help restore daily routines and promote a healthy life-style
	2. Educating the patient about what to self-monitor
	3. Supervising a maintenance program of exercise, edema management, and mobility management and mobility
III. Recurrence	1. Educating the patient about the impact of recurrence and its effect on function
	2. Educating the patient about what to monitor in the context of the new clinical status
	3. Supervising the patient in an appropriate program to restore function or prevent its decline
IV. End of life	1. Educating patient/family regarding mobility training, good body mechanics and assistive devices
	2. Pain management (non-pharmacologic treatment) and symptom control
	3. Maintaining independence and quality of life

Quoted from ref. no. 15.

syndrome and maintain physical and muscle strength by performing mild exercise therapy and sedentary occupational therapy. Failure to resume ambulation during treatment and the development of severe disuse syndrome often occur, especially among infants and the elderly. It is important for the rehabilitation staff to visit the patient regularly and to make movement a habit, even if only a little at a time, by incorporating activities that the patients enjoy.

Moreover, many patients today receive outpatient chemotherapy as well as inpatient chemotherapy, and treatment is expected to shift even further toward an outpatient setting. Patients undergoing outpatient chemotherapy continue their daily lives at home while receiving treatment. Continuing to work and keep house, while experiencing the adverse effects of treatment often imposes a major burden on patients. The rehabilitation staff should determine which activities a patient considers to be important in his or her life so that the patient can recognize their own symptoms and acquire his or her desired ADL, with the rehabilitation staff proposing activities that will help the patient to do what he or she wants to do. Giving the patients the sense that they are able to control their own activities in this way is an important link to preserving their self-confidence.

Rehabilitation During the Recurrence and Advanced Stages

Patients with recurrent and advanced cancer experience a variety of symptoms associated with cancer progression. Because patients also sometimes develop disuse syndrome and their general condition rapidly deteriorates when they are deprived of opportunities to move as a result of general malaise and feeling tired, it is desirable to maintain a minimum of self-care in their everyday lives, i.e. feeding, elimination and bathing, whenever possible.

As the disease progresses, patients are compelled to cope with physical symptoms that develop one after another. Faced with these circumstances, caution is required when dealing with patients during this phase, when they are also often confronted with situations that may make the cure of their disease difficult. Because many patients are trying to concentrate on treatment during the phase, with the aim of a cure, the improvement of physical functions is often ranked first among patient's hopes with regard to rehabilitation. However, when they approach the transition period, it becomes necessary to consider what it is that they really want to do in anticipation of the future deterioration of their physical condition. It takes time for this transition to occur, and the feelings of patients and their families may change markedly. It is important to recognize that fluctuating feelings are natural, and it may be necessary to listen closely to the patients and their families from time to time and await their choices. In terms of the goals of rehabilitation, the rehabilitation staff should interact with the patients and their families in a manner that will enable them to accept reality and to identify their goals. The rehabilitation approach should also take into consideration the environment surrounding the patient, including the patients' own remaining functional activities as well as the human support that is available, the utilization of healthcare devices, and the utilization of social resources, so that patients are able to achieve whatever they hope to do.

Rehabilitation During the Terminal Stage

Patients' and their families' needs are most important during the terminal stage. When patients express strong wishes, such as 'I want to go to the bathroom' and 'I want to walk', up until the very end, it is sometimes possible to satisfy their wishes by teaching family members how to assist them,

making adjustments to the environment around the bed and around the bathroom, and by making walking aids available, even when there is no prospect for improvement in the patients' functions. Communication with patients and their families also becomes important during this phase, and when communication becomes difficult for patients, providing support designed to achieve understanding among patients, their families and the staff by introducing communication aids or assisting with conversation is another important role of rehabilitation.

Moreover, even when a patient's general condition deteriorates, it is possible to perform rehabilitation until the very end by going to the patient's bedside and touching the patient's body through palliative interventions, such as range of motion (ROM) exercises for the patients' limbs, massage for swollen lower limbs or breathing assistance.

As stated earlier, rehabilitation can be applied throughout the entire phase of disease from the time of diagnosis until the terminal stage, and involvement with psychosocial aspects not just physical aspects can be included as one possible approach.

REHABILITATION NEEDS

Several studies have already been conducted regarding the needs of cancer patients in relation to rehabilitation. A survey of the rehabilitation needs during the initial stage of treatment in the USA revealed that 87% of the patients had rehabilitation needs, and recovery from deconditioning; improvement of impaired mobility, restricted ROM and impaired ADL, and a need for distraction were cited as rehabilitation needed (16). In the Netherlands, it was reported that 26% of the participants desired specialized support to strengthen physical functions, to deal with their physical and social situation, and to find new goals in their lives (17). In addition, broader needs were cited in relation to the lives of those living at home, including with respect to financial matters, the performance of housework and means of transportation (18). However, the results of interventions to meet such needs have never been elucidated.

Moreover, in a questionnaire survey of the families of patients who had died in a palliative care unit in Japan, pain, impaired mobility and ADL impairments were mentioned as problems during the hospital stay, and it was shown that even during the terminal stage 85% of the patients wanted to be able to walk or to move about in a wheelchair, and interventions with regard to these aspects were said to be effective and satisfactory (12). However, what patients themselves feel is effective and satisfactory has never been elucidated in proxy evaluations by bereaved families, and there have been no reports of investigations of the families' degree of satisfaction or changes in their emotions.

We therefore provided rehabilitation to 23 inpatients of a cancer hospital for 2 weeks and conducted a survey of the patients and their families to determine what changed before and after the rehabilitation (19). The performance status (PS) of the patients was 3 in 12 cases (52.2%) and 4 in 8 cases (34.8%); thus, 87% of the patients had a PS of 3–4. The rehabilitation that was performed consisted mainly of standing training, gait training and upper limb function training. The results of the rehabilitation interventions included changes in several physical aspects and considerable changes in the emotional states of both the patients and their families (evaluated using a face scale). Thus, psychological suffering was alleviated by the rehabilitation efforts. When the patients and their families were surveyed separately with regard to how they felt about the effectiveness of the rehabilitation, the patients mentioned 'a feeling of relief as a result of receiving guidance' and 'psychological support', while the families mentioned content related to the impact of the rehabilitation on the psychological aspects of the patients, such as 'effective in terms of mental aspects', 'fun' and 'restoration of self-confidence'. Based on the earlier-mentioned findings, rehabilitation for cancer patients may be effective not only in terms of physical aspects, but also in terms of psychological aspects.

CURRENT STATUS OF CANCER REHABILITATION IN JAPAN

In March 2006, we conducted a survey on the current status of cancer rehabilitation by mailing questionnaires to 1693 nationwide healthcare institutions certified as general hospitals, long-term care hospitals or multi-unit hospitals according to evaluations performed by the Japan Council for Quality Health Care in December 2005. The survey asked whether the institutions had performed rehabilitation for cancer patients in 2005, and the institutions that had performed cancer rehabilitation were surveyed as to the nature of the rehabilitation that was performed, the stage of the cancer patients' disease, the type of cancer, the number of patients who received rehabilitation, the occupations of the personnel who provided the rehabilitation and whether the institution had a specialized cancer rehabilitation facility or equipment. In addition, the institutions where cancer rehabilitation was not being performed were asked about whether there was a need for cancer rehabilitation, the settings in which they felt that there was a need, the reason why rehabilitation was not being performed, and whether there were any plans to perform rehabilitation in the future (20).

Valid replies were received from 1045 (62.0%) of the healthcare institutions nationwide, and 864 (82.7%) of them were institutions that had performed rehabilitation for cancer patients in 2005. However, we could clarify the exact number of cancer patients who received rehabilitation. In terms of the nature of the rehabilitation, large percentages replied that they had performed rehabilitation for physical functions: gait training in 92.1%, muscle strength training in 88.9% and joint ROM training in 85.6%. A large percentage of the institutions (73.6%) also provided training with regard

to ADL. Small percentages of the institutions performed specialized rehabilitation for lymphedema care, postoperative head and neck cancer care, colostomy care after colorectal cancer surgery, urostomy care after surgery for urinary tract cancer or rehabilitation that focused on mental and psychological aspects. Of the 181 institutions that had not performed rehabilitation for cancer patients, 171 (94.5%) replied that they felt a need for rehabilitation for cancer patients. The most common settings in which a need was felt were when 'patients would say that they wanted to stand up and walk again' and 'patients would say that they wish they could go to the bathroom without needing help from anyone'.

The above results indicated a large need for rehabilitation for cancer patients, but it was not concluded to what extent the current status met the needs of cancer rehabilitation. This survey also showed that the system for performing cancer rehabilitation is inadequate and that it is needed to assess strategies designed to develop and disseminate rehabilitation programs for cancer patients.

CURRENT PROBLEMS AND PERSPECTIVES

As stated already, although the need for the rehabilitation of cancer patients has been recognized, the degree of recognition in the field of oncology remains somewhat low. The fact that there have been few reports demonstrating its effectiveness can be cited as one of the reasons for this state of affairs. Recently, a systematic review regarding the health effects of exercise during cancer rehabilitation has been established (21). Ten studies were reviewed, and improvements in physical functioning, strength, physical activity levels, QOL, fatigue, immune function, hemoglobin concentrations, potential markers of recurrence and body composition were reported. However, all the studies were limited by incomplete reporting and methodological limitations.

We also systematically reviewed the effectiveness of cancer rehabilitation in palliative care using the keywords 'cancer' AND 'palliative care' AND 'rehabilitation' to search a medical literature database (PubMed) on 17 August 2009. We restricted the study design to intervention studies (retrospective studies and case reports were excluded, and music therapy was also excluded) and to studies that focused on physical functions and daily living functions. After conducting discussions twice a year (a total of four times), we performed a systematic review of the following survey items: lead author, name of the country, journal name, year of publication, number of subjects, cancer site, proportion of females, age, composition of the rehabilitation team, intervention (method, frequency and time per day), main outcomes and main results. As a result, only eight documents were retrieved, and three of them were randomized controlled trials (in submission). Thus, although rehabilitation is being practiced in the palliative care area, the evaluation of its outcome will be a future task.

We have not devoted much attention to the particulars of rehabilitation in this review because considerable variation exists in the interventions that are actually being performed for individual patients and because the interventions have been established as rehabilitation techniques and are not specifically performed only for cancer patients. Instead, the task from now on will be to determine how rehabilitation personnel may acquire knowledge about cancer and incorporate established techniques into cancer care.

CONCLUSION

Interest in cancer rehabilitation in Japan has increased since cancer patient rehabilitation fees were newly established in the 2010 revision of medical care service fees. However, it is still hard to say that the need for rehabilitation services has been adequately acknowledged in cancer care and that future research is needed because high-quality literature evidence is still lacking.

Rehabilitation is expected to become an important support that sustains the hopes of patients and their families, as it is said that 'Being able to maintain and improve ADL as much as possible, while skillfully using remaining physical strength is a great joy and is linked to the desire to live'.

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Conflict of interest statement

None declared.

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