

Ⅲ．研究成果の刊行に関する一覧

IV . 研究成果の刊行物、別刷り

Feasibility and Obstacles in Home Chemotherapy for Malignant Lymphoma

Yuko Kodama,^a Masahiro Kami,^a Koichiro Yuji,^b Miyoko Kuboya,^c Tsunehiko Komatsu^d

^a*Division of Exploratory Research, Institute of Medical Science, The University of Tokyo, Tokyo, Japan;* ^b*Department of Internal Medicine, Institute of Medical Science, The University of Tokyo, Tokyo, Japan;* ^c*Visiting Nurse Station, Tsukuba Memorial Hospital, Tsukuba, Japan;* ^d*Department of Hematology, Tsukuba Memorial Hospital, Tsukuba, Japan*

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Abstract

Home care has become a treatment option for cancer patients; however, medical practice at patients' homes has been expected mainly for terminal care in Japan. Most physicians believe that it is difficult to treat patients with hematologic malignancy at home because they frequently develop complications requiring urgent interventions. We herein report the case of an 80-year-old patient with advanced follicular lymphoma who safely received aggressive chemotherapy at home and finally died due to disease progression at the hospital. Home chemotherapy can be a feasible and potentially novel treatment option for some patients with hematologic malignancy, although the clinical course of the present patient suggested that patient selection is critical for the safe operation of home chemotherapy and that it is important to educate families on how to evaluate patients' conditions and how to cope with aggravation and admission arrangements in back-up hospitals.

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1. Background

Home chemotherapy has become possible as a result of the introduction of technological innovations such as continuous and portable infusion devices. This may help to maintain patients' lifestyles with minimal disruptions to daily activities, and home chemotherapy may offer a safe, effective, and cost-effective option that may enhance patient control and independence during cancer treatment [1].

Although hematologic malignancies are the major disease category in outpatient chemotherapies [2,3], home chemotherapies are less common for hematologic malignancies than solid tumors. Patients with hematologic malignancies frequently develop serious complications such as infections and hemorrhage secondary to myelosuppression and the underlying diseases. Because these complications require

prompt and intensive treatments, most physicians believe that it is difficult to manage such events at home [4]. Medical practice at patients' homes has been expected mainly for terminal care in Japan [5,6], and aggressive treatments at home for cure are not a realistic option for patients and medical practitioners.

Because the characteristics of patients with hematologic malignancies are diverse and their managements vary widely, home chemotherapy may be feasible for some subgroups. Some researchers have attempted home chemotherapy for patients with hematologic malignancies, and favorable outcomes have been reported [7]. We report the case of a patient who received home chemotherapy for the treatment of malignant lymphoma and discuss its feasibility and obstacles.

2. Case Report

The patient was an 80-year-old woman who used to work as a teacher. She lived with her son and his wife. Several of her relatives worked in the medical field. In 1981, she received a diagnosis of follicular lymphoma stage IIa. After complete remission (CR) was achieved by combination chemotherapy containing cyclophosphamide, vincristine, and prednisolone, she was closely observed without treatment. After progressive disease (PD) was documented in 1989, she

Correspondence and reprint requests: Yuko Kodama, RN, MS, Division of Exploratory Research, Institute of Medical Science, The University of Tokyo, 4-6-1, Shirokanedai, Minato-ku, Tokyo 108-8639, Japan; 81-3-6409-2068; fax: 81-3-6409-2069 (e-mail: alice-smn@umin.net).

repeatedly experienced PD and CR with chemotherapies. During this period, her primary physician was an internist not specializing in hematology.

She was referred to Tsukuba Memorial Hospital in 1997 for progression of the underlying disease. Remission induction therapy with cyclophosphamide, tetrahydropyranlyadriamycin, vincristine, and prednisolone was ineffective. The patient, her son, and his wife desired to continue aggressive treatments for cure at home in 1999. Her complications included diabetes and hemorrhoids that were well controlled and required no treatment. The Charlson Comorbidity Index was 3 [8]. She had mild functional disorders, and the Functional Independence Measure (FIM) score was 116 [9]. She could independently move at home, but required family attendance to visit the Outpatient Department of Tsukuba Memorial Hospital.

Cytarabine, carboplatin, etoposide, and steroids (ACES) (Table 1) were initiated on April 19, 1999, while she was hospitalized [10]. We reduced the dose to 70% of the original regimen, considering her age. She was discharged on day 5, the day of completion of chemotherapy, and received granulocyte colony-stimulating factor (G-CSF) in the Outpatient Department.

The second cycle of ACES was initiated on May 10 (day 1). A portable disposable infusion pump (Baxterinfuser; Baxter, Chicago, IL, USA) was set in the Outpatient Department for the continuous infusion of carboplatin. She orally received prednisolone, etoposide, and antiemetics and returned home. From days 2 to 4, she continued oral and continuous intravenous infusion chemotherapy at home, and the attending physician and the attending nurse visited her home once or twice a day. The attending physician was the same as the physician on the ward. On day 5, she visited the Outpatient Department for intravenous cytarabine and removal of the disposable infusion pump. The attending nurse visited her home on day 8 for G-CSF administration and noted occlusion of the catheter. The nurse instructed the patient to come to the hospital as soon as possible. In the afternoon of the same day, her physician successfully flushed the catheter with heparinized normal saline in the Outpatient Department.

She received all chemotherapeutic agents and G-CSF of the third cycle at home, starting on June 3 (day 1). No complication associated with chemotherapy was observed. She developed pharyngeal pain on day 8, which disappeared on

taking nonsteroidal anti-inflammatory drugs. Periodic chest x-ray on day 21 visualized an abnormal position of the central line, suggesting that the catheter tip was displaced out of the central vein. When she visited the Outpatient Department for reinsertion of the central line on day 23, she had facial edema. Her respiratory rates were within normal limits. After conducting chest computed tomography (CT), obstruction of the superior vena cava (SVC) was diagnosed (grade 3 according to the Common Terminology Criteria for Adverse Events [CTCAE] v. 3.0) [11]. Considering that she had several risk factors of thrombosis including underlying disease, catheter insertion, and prolonged bed rest, she was admitted for close monitoring and received continuous intravenous heparin. The clinical course of this patient is shown in Figure 1. The scheduled chemotherapy was postponed. Grade 3-5 toxicities [11] other than thrombosis in the SVC were not documented. She did not require blood transfusion during home chemotherapy.

After chest CT demonstrated the disappearance of the thrombus on July 15, the fourth course of chemotherapy was resumed, and chemotherapy thereafter was administered during hospitalization. Chemotherapy was continued for approximately 2 years. The patient died of primary disease progression in Tsukuba Memorial Hospital in September 2002.

3. Discussion

Though the present study suggests the feasibility of home chemotherapy for malignant lymphoma, further modifications are necessary for the better management of home chemotherapy.

Administration routes of chemotherapy require modifications. Switching intravenous administration of etoposide in the original ACES regimen [10] to oral administration could avoid the risk of extravascular leakage and precipitation. The average bioavailability of etoposide is 50%, and adjustments for its personal variation [12] need to be investigated. Although carboplatin requires continuous intravenous administration, the use of a portable disposable pump could free the patient from the infusion pole. The choice of carboplatin negated the need for hydration [13], which contrasts with other platinum agents. Since the infusion time of cytarabine was as short as 3 hours, it was given intravenously. We hospitalized the patient for the first course of chemotherapy to closely observe such procedures of drug administrations, to confirm the feasibility of

Table 1.
Chemotherapy Regimen*

Drug	Dose	Administration Route																						
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Carboplatin	70 mg/m ²	Continuous intravenous†	•	•	•	•																		
Etoposide	56 mg/m ²	Oral	•	•	•	•																		
Cytarabine	1.4 g/m ²	Intravenous					•																	
Corticosteroids	100 mg/body	Oral	•	•	•	•	•																	
Granulocyte colony- stimulating factor	150 µg	Subcutaneous																						

*During home chemotherapy, antiemetic drugs were given orally or intravenously, and gargling was recommended for the prevention of stomatitis.

†The subcutaneous reservoir was inserted in the right chest, and anticancer agents were administered through it using a portable disposable infusion pump (Baxterinfuser; Baxter, Chicago, IL, USA).

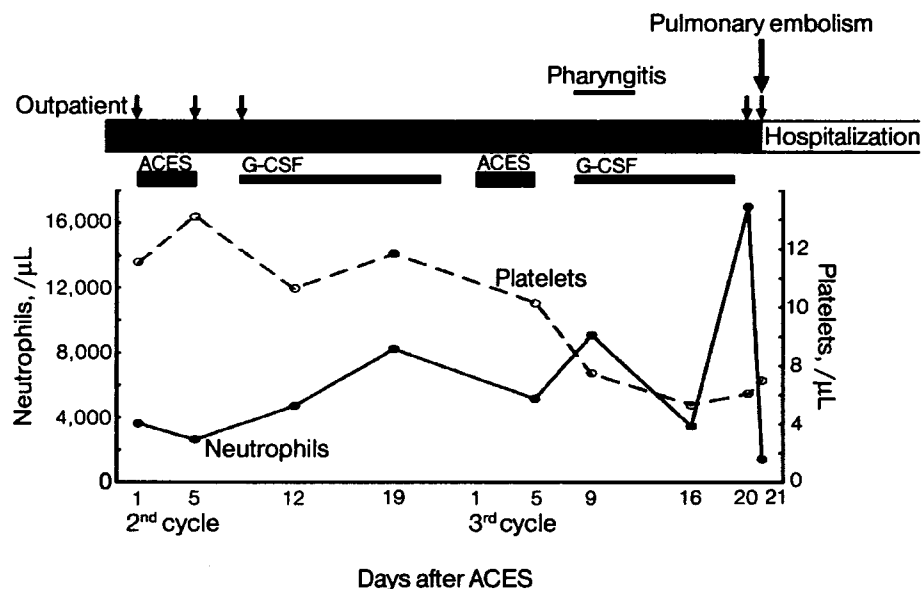


Figure 1. Clinical course of the patient. The patient received cytarabine, carboplatin, etoposide, and steroids (ACES) at home. No infection was observed except for pharyngitis. Platelet or red blood cell transfusion was not required. She developed obstruction of the superior vena cava and was admitted to the hospital. G-CSF indicates granulocyte colony-stimulating factor.

home chemotherapy, and to extract problems to be solved. We could also explain to her family the treatments, possible adverse events, and how to handle them. This case indicated that novel chemotherapy regimens are required for safe home chemotherapy.

Patient selection is critical for the safe operation of home chemotherapy, and the present case suggests several eligibility criteria for it. Firstly, the risk of sudden aggravation must be low. Such factors include performance status, the diagnosis and stage of the primary disease, and the intensity of the scheduled chemotherapy. Since the present patient had a good performance status and slowly progressive follicular lymphoma, she tolerated relatively intense chemotherapy at home. Secondly, patients must recognize the value of life and the importance of the relationships among family members. The present patient and her family were ready to accept her death at home, even if her condition became suddenly aggravated and the medical staff could not reach her home in time. Such perception and readiness must have contributed to the high satisfaction levels of the patient and her family. Thirdly, it should be noted that her family played an important role in preventing her aggravation as they could notice subtle changes in facial edema and report them to the medical staff. Patient and family education is an important matter in cancer treatment [14]; however, little information is available on family support in cancer chemotherapy at home [15,16], and so the further accumulation of experiences is awaited.

An appropriate combination of hospitalization, clinic treatment, and home treatment is essential for successful home chemotherapy. Furthermore, social support plays a role in alleviating caregivers' distress and results in more positive adjustments to care demands [17]. When patients and their families desire home treatment, we need to assess their desire and the disease status and determine an appropriate treat-

ment plan. Because the primary physician remained unchanged throughout hospitalization, clinic, and home treatments and because visiting nurses and nurses on the ward were staff of the same hospital, information sharing regarding changes in the treatment plan and cooperation were relatively easy for our patient. Importantly, we should recognize that nurses frequently play pivotal roles in cooperation, as shown in this case and previous studies [18,19]. The teamwork that accomplishes prompt arrangements for hospitalization, clinic visits, or discharge in response to patient status changes is important for reassuring the patient and family and likely to contribute to a better quality of life.

This case suggested that home chemotherapy can be a treatment option for some patients with hematologic malignancies. We are planning to accumulate more patients, to extract issues to be addressed, and to examine ways to solve them. We could not collect enough information on contents and methods of teaching the family during home treatments in the present case. The contribution of nurses may be more important in teaching than that of physicians. The role of nurses in home chemotherapy needs further investigation.

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