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Retrospective Study on Home Care for Patients with Hematologic Malignancies

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Objective: There is a lack of sufficient information on the employment of home care for the treatment of hematologic malignancies.
Methods: We provided home care to 580 patients from 1 January through 31 October 2007. Patients with hematologic malignancies were selected from these 580 patients; subsequently, by reviewing their medical records.
Results: The main clinical condition in 15 (2.6%) of 580 patients was hematologic malignancies. The median age of the patients was 78 years (range, 64–92). Of the 15 patients, 12 showed a performance status (PS) of 3–4, and the condition of 6 patients was complicated with dementia. Food intake via the oral route was possible in 14 patients. These patients were administered palliative care. Among the seven patients who required pain control, four had been opioid users; however, none had used anticancer drugs for pain relief. Furthermore, three patients received blood transfusion. Although three patients developed severe complications (acute appendicitis, pneumonia and hyperglycemia), we were able to treat all cases adequately. Eight patients died at home due to aggravation of the primary diseases. The remaining seven patients were transferred to other hospitals for the treatment of complications or for the convenience of their respective families.
Conclusions: Even patients with hematologic malignancies could be candidates for home care if their underlying diseases are slowly progressive, and they can sustain themselves by oral intakes. Dementia and poor PS are not contraindicated to it.

Key words: home care – hematologic malignancy – lymphoma – chemotherapy – palliative care

INTRODUCTION

Similar to hospitalization and outpatient care, home care is a form of treatment offered to cancer patients. In home care, it is possible to continue treatment while taking into consideration the set of values and lifestyle habits of each individual, and to maintain the balance in their relationships with their family in the environment they are accustomed to live in. In Western countries, a number of research papers dealing with end-of-life care and the management of cancer-related pain have been published in relation to home-based cancer treatment. These reports showed that home care is effective for either terminally ill patients who are in a stage of pain or of those who still can spend quality time at home (1–3), provided that they and their family can skillfully control the associated complications (4–6).

Although hematologic malignancies are the main targets of outpatient chemotherapy (7,8), home-based chemotherapy has been employed with a lower frequency than for solid cancers (9). Due to the occurrence of myelosuppression caused by anticancer drugs or the primary disease itself, rapid changes such as development of infections or bleeding can easily occur in patients with hematologic malignancies; thus, the administration of anticancer drugs should be

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accompanied by strict anti-infective measures and transfusion. Many healthcare practitioners consider that it is impossible to deal promptly with such rapid changes at home (10); as a consequence, home care for hematologic malignancies has not yet been established as a common practice (11). However, autografting under home care settings has been attempted on young subjects, and its feasibility has been demonstrated (12,13).

There is little information on the epidemiology of hematologic malignancy, especially during home care and at death at home (14,15). We have administered home care to patients with hematologic malignancies. We investigated its medical and social characteristics, and its associated problems.

PATIENTS AND METHODS

Data Collection

This study was conducted with the participation of clinics specialized in home care from 10 different locations in 8 localities. These clinics voluntarily participated in this survey. Of the 10 clinics, cancer specialists worked as full-time staff in 9, whereas blood cancer specialists worked in 1.

Patients who have been mainly affected by hematologic malignancies were selected from among 580 cases who received home care at the 10 institutions mentioned above between 1 January and 31 October 2007, including those who died or whose treatment was terminated being transferred to other hospitals. Underlying diseases were malignant ($n = 299$) and non-malignant ($n = 281$). We investigated the current status of the practice of home treatment, using the archived medical history of these patients. The parts of information that could not be assessed from medical history were investigated by asking the attending physicians. The contents of the survey were the patients' medical and social background, and their treatment and outcome.

Endpoints and Ethical Considerations

The purpose of this study is to explore medical and social characteristics of patients with hematologic malignancies who receive home care, and its associated problems. We have obtained approval of the Ethical Review Board of the Institute of Medical Science, University of Tokyo.

RESULTS

Medical Background

Fifteen (2.6%) of 580 patients had hematologic malignancies as their main disease. Background information is shown in Table 1. The patients had a median age of 78 years (range, 64–92). In 12 of 15 patients, the general status at the beginning of the home care was classified as 3–4 on the basis of the performance status (PS) according to the Eastern Cooperative Oncology Group (16), and 6 cases were complicated with dementia. Oral dietary intake was possible in 14 cases.

Social Background

All the subjects lived in their own homes. Twelve of 15 subjects lived together with their families, whereas the other three lived alone. Two patients received regular visits from family members living nearby. The remaining one lived alone. From an economic standpoint, 2 of the 15 patients received social welfare, whereas the others were financially self-supported.

Seven patients were treated by home doctors, and the other eight received care from visiting nurses in cooperation with home doctors.

Contents and Complications of Home Care

The contents and complications of medical care conducted at home are shown in Table 2. All the 15 cases received palliative care. Three cases (Cases 2, 8 and 13) needed transfusion because of anemia. Transfusion was performed at home for one case and at a clinic for two others. Platelet transfusion was not performed during the home treatment period, because bleeding tendency was not documented in any of the 15 patients.

Three patients received palliative chemotherapy; thalidomide (Cases 9 and 15) and oral VP-16 (Case 12). Case 9 received intravenous administration of anticancer agent at outpatient setting. All the three patients had not responded to these chemotherapies.

Case 14 died at home on the next day after the symptoms had appeared. Cases 12 and 15 placed an emergency call to their home doctors. Both patients were taken to hospital by ambulance, and died. The complications included disturbances of consciousness due to acute appendicitis, pneumonia or hyperglycemia.

Three patients (Cases 12, 14 and 15) developed complications during home care. The efficacy of treatment was no higher than partial response in any of the patients. Moreover, Case 9 received intravenous administrations of anticancer drugs in ambulatory treatment. Three cases (Cases 9, 12 and 15) received chemotherapy during home care. Thalidomide was administered orally in Cases 9 and 15, and oral VP-16 was administered to Case 12.

All of the 15 patients/their families consented to a do-not-resuscitate order at the terminal stage at home.

Outcome

Eight of the 15 patients died at home, all the deaths being due to an aggravation of the primary disease. At the time of death, Case 14 was complicated with pneumonia. The remaining seven cases terminated home care as they changed to other hospitals. The median duration of home care was 67 days (range, 8–512). That included duration of <10 days

Table 1. Medical and social backgrounds of 15 patients with hematologic malignancies who received home-based cares

Case	Sex	Age	PS[a]	Nutrition	Primary diseases	Dementia	Complications	Chemotherapy before home-based care	House style	Number of relatives living together	Economic support
1	Female	89	1	Oral	Malignant lymphoma	Absent		None	Own home	2 (married son and his wife)	
2	Female	81	3	Oral	Malignant lymphoma	Present	Chronic renal failure, anemia	None	Own home	Some	
3	Male	78	4	Oral	Malignant lymphoma	Present	Alcoholic liver disease, cancer pain	CHOP[b]-related	Own home	1 (grown-up son)	
4	Male	78	4	Oral	Malignant lymphoma	Present	Hypertension, cancer pain	Chemotherapy (regimens not recorded), irradiation	Own home	1 (wife)[c]	
5	Male	69	3	Oral	Malignant lymphoma	Absent		None	Own home	Solitary[d]	Welfare recipient
6	Female	77	2	IVH,[e] tubal feeding	Malignant lymphoma	Present		CHOP, irradiation	Own home	5 (husband, married son, his wife and their children)	
7	Female	87	3	Oral	Acute myeloid leukemia	Absent	Interstitial pneumonia	CAG,[f] 6-MP	Own home	3 (husband, married son and his wife)	
8	Male	65	4	Oral	Acute myeloid leukemia	Present		CAG[f]	Own home	Some	
9	Female	70	3	Oral	Multiple myeloma	Absent		VAD[g], high-dose dexamethasone	Own home	Some	
10	Male	64	4	Oral	Multiple myeloma	Absent		VAD[g], hyperCVAD[h]	Own home	Solitary	Welfare recipient
11	Male	80	4	Oral	Multiple myeloma	Absent	Depression, decubitus	MMVD,[i] dexamethasone, thalidomide	Own home	Solitary[d]	
12	Male	86	3	Oral	ATLL[j]	Absent		Oral VP-16, prednisolone	Own home	1 (wife)[c]	
13	Female	77	4	Oral	Multiple myeloma	Absent		VAD[g], hyperCVAD[h]	Own home	Some[k]	
14	Female	92	3	Oral	Chronic lymphocytic leukemia	Present	Angina pectoris, hypertension	None	Own home	Some[k]	
15	Female	68	2	Oral	Multiple myeloma	Absent		Chemotherapy (regimens not recorded)	Own home	Some	

[a]PS, performance status according to the Eastern Cooperative Oncology Group.
[b]CHOP, cyclophosphamide, doxorubicin, vincristine, prednisolone.
[c]Elderly couple households.
[d]Solitary, but they received regular visits from family members living nearby.
[e]IVH, intravenous hyperalimentation.
[f]Cytarabine, aclarubicin, G-CSF.
[g]VAD, vincristine, doxorubicin, dexamethasone.
[h]CVAD, cyclophosphamide, vincristine, doxorubicin, dexamethasone.
[i]MMVD, vincristine, ranimustine, melphalan, dexamethasone.
[j]ATLL, adult T-cell leukemia/lymphoma.
[k]Living with the family, but solitary in daytime.

Table 2. Complications of home health care and outcomes

Case	Treatment during home care	Complications during home-based care	Duration of home care (days)	Outcomes
1	Analgesics (non-steroidal anti-inflammatory agents)	None	228	Death
2	Transfusion and erythropoietin	None	512	Hospitalization
3	Analgesics (non-steroidal anti-inflammatory agents)	None	109	Death
4	Analgesics (non-steroidal anti-inflammatory agents and opioids)	None	10	Death
5	Analgesics (non-steroidal anti-inflammatory agents)	None	307	Hospitalization
6	Nutritional support (IVH,[a] tubal feeding)	None	8	Death
7	Prophylactic antibiotics	None	10	Death
8	Transfusion, prophylactic antibiotics	None	18	Death
9	Analgesics (non-steroidal anti-inflammatory agents and opioids), prophylactic antibiotics, G-CSF, bisphosphonates and palliative chemotherapy (thalidomide)	None	407	Death
10	Analgesics (non-steroidal anti-inflammatory agents and opioids)	None	9	Hospitalization
11	Palliative chemotherapy (thalidomide)	None	23	Hospitalization
12	Palliative chemotherapy (oral VP-16, prednisolone)	Appendicitis	67	Hospitalization
13	Transfusion	None	99	Hospitalization
14	Antibiotics and supportive therapy for aspiration pneumonia	Aspiration pneumonia	25	Death
15	Analgesics (opioids), palliative chemotherapy (thalidomide)	Hyperglycemic hyperosmolar coma	127	Hospitalization

G-CSF, granulocyte colony-stimulating factor.
[a]IVH, intravenous hyperalimentation.

in four cases, <1 month in three cases, <3 months in one case, <6 months in three cases and less than a year in two cases.

For seven patients, the reasons for hospital transfer were treatment of acute diseases (Cases 12 and 15) or their family's financial difficulty in continuing home care (Cases 2, 5, 10, 11 and 13). Four of them died after being transferred to another hospitals, the median length of hospitalization being 25.5 days (range, 2–44) at hospital transfer. As for the remaining three cases, no information was available after hospital transfer.

DISCUSSION

We have little information on home care for elderly patients with hematologic malignancy. We believe that this small-sized study provided some important information on it. These patients could be candidates for home care, if they satisfy some eligibility criteria such as oral intakes, and slow progression of underlying diseases. However, to provide the safest home care to them, several issues should be discussed.

It is difficult to make a definite conclusion on requirements of home care for hematologic malignancies, since the present study did not contain the controls. However, many patients satisfied certain medical conditions, and these findings were comparable to previous reports on home care for solid tumors (17,18). Any types of hematologic malignancies can be candidates for home care; however, progression of underlying diseases must be slow. Furthermore, this study showed some requirements including scarcity of complications, smallness of the doses of anticancer medication received prior to the transition from clinic-based to home care, and the possibility of oral intake. In contrast to our expectation, we were able to safely provide home care to patients with decreased PS, and six patients with dementia were successfully treated at home. We should realize that home care is not contraindicated under such conditions, if patients receive sufficient family supports.

This study showed that the social situation of patients is to be taken into consideration when a home care option is chosen. Interestingly, most patients who received home care were financially self-sufficient, and they still received support from their families who lived with or near them. The abovementioned fact shows that it is possible for families and non-gratuitous social services to substitute for the role of hospital staffs. When home care is to be promoted in Japan, where there is a trend for aging to advance and for budget deficit to increase, a discussion on the manner in which the associated costs are to be defrayed is warranted.

Home care frequently focuses on pain control, and seven patients were administered pain-relief treatments in this study. While narcotics are the backbone of pain control, we administered narcotics to four patients. The ratio of narcotics users to the number of all patients in this study was lower than that observed in Japan and abroad (19,20). These findings suggest the possibility that the use of narcotic drugs might prevent the transition of patients from clinic-based to

home care, since the administration of narcotics is not common in home care. In addition, since hematologic malignancies are highly susceptible to anticancer agents, these medications may also be used for palliative care (21). However, no patients in this study were administered anticancer drugs intravenously for symptom relief. It is possible that under home care, patients are deprived of palliative care employing intravenous anticancer medications. Additional research on optimal pain control under home care is warranted.

Transfusion is important in the treatment of hematologic malignancies. However, most patients were not transfused, and none complained of shortness of breath or experienced massive bleeding. It is to be noted that two of the three patients who required red cell transfusion received it at the ambulatory setting. These findings suggest the following:

(i) Many healthcare practitioners consider that under the present conditions, transfusion should be conducted in medical institutions.
(ii) The indications of home care could exclude patients who require frequent transfusion or who require platelet transfusions because of high risks for bleeding.
(iii) The requirement for transfusion might be considered to be one among the criteria for selecting home treatment. Transfusion occasionally causes serious side effects; further, careful examination is necessary prior to conducting the procedure at home.

Infection is a serious complication in patients with hematologic malignancies. In this study, two patients developed severe infections, namely acute appendicitis and pneumonia. The fact that serious infections occur regardless of the selection of patients with low risk of infection suggests that in the home care of hematologic disorders, it is important to prevent infections and to administer early treatment. In addition to infections, patients with multiple myeloma who were administered steroids also developed a disturbance of consciousness due to hyperglycemia. The above-discussed three patients could receive appropriate treatment because their families responded early with respect to support for the patients. This means that educating patients and their families on home care is important for the smooth operation of home care.

In this study, the reasons for the termination of home care were death at home in eight and hospitalization in seven. In addition to the fact that patients lived alone during the day or at night ($n = 4$), the unpreparedness of the patients to face unpredictable deaths ($n = 1$), the absence of continuous financial assistance due to the financial constraints of the available social supports and the lack of desire for receiving nursing care at home ($n = 3$). In this study, the continuation of home care was influenced by the composition of the families of the patients, their desire to continue treatment and their economical situation. These facts show conformity with the results of other preliminary studies (22,23).

This study showed that certain patients with hematologic malignancies could be candidates for home care if their underlying diseases are slowly progressive, and they can sustain themselves by oral intakes. However, this study had some unresolved issues. The most important is that the study was conducted on a small number of subjects in limited number of facilities. We cannot deny the possibility that unrecognized bias might have influenced the results of this study. The patients'/their families' satisfaction with home care is not yet known. Future verification of the study results through prospective large-scale studies is required.

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Conflict of interest statement

None declared.

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