

Mandatory Palliative Care Education for Surgical Residents: Initial Focus on Teaching Pain Management

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Background: Knowledge concerning palliative care and the associated skills, including effective pain control, is essential for surgeons who treat cancer patients in daily practice. This study focuses on a palliative care training course that has been mandatorily conducted for all surgical residents of our hospital since 2009.

Methods: We evaluated the effectiveness of our mandatory palliative care training course by conducting a retrospective study of the patients' medical records and participants' questionnaire results and discussed the importance of palliative care education for surgical residents.

Results: All 12 surgical residents who participated in the course in 2009 had graduated 4–9 years back. They were assigned to look after a total of 92 cases (average, 7.66 cases per resident) during the course. The purpose of care in most cases (92.3%) was to mitigate pain. Introducing analgesic adjuvants such as gabapentin or amitriptyline accounted for the largest part of initial interventions (23.9%) aimed at controlling cancer pain, followed by changes in route of administration or doses of prior opioid analgesics (21.7%). Interventions with opioid analgesics were conducted most frequently (47.7%). The overall pain improvement rate was 89.1%. We used a questionnaire after the course to evaluate its effectiveness.

Conclusions: The surgical residents stated that it was a meaningful course through which they gained practical knowledge on palliative care and that the experience would change their approach to home care.

Key words: palliative care – surgeon – postgraduate training

BACKGROUND

Fatalities from cancer in Japan exceed 300 000 per year. Today, one in three patients with cancer dies of a malignant neoplasm (1). Under such circumstances, the Ministry of Health, Labour and Welfare of Japan established the Cancer Control Act in 2006. Based on answers to questions in relation to palliative care by certified cancer therapy doctors (i.e. cancer specialists), it has been recognized that knowledge

concerning palliative care and the associated skills, including effective pain control, are essential for cancer specialists. Moreover, the implications for palliative care are more profound for surgeons who treat cancer in daily practice (2).

Against the backdrop of these increasing concerns, we have been conducting a 1-month mandatory training session in the palliative care department of our hospital for all surgical residents since 2009. Residents learn palliative care

during the entire course of illness, and the contents of the course range from training in making accurate pain diagnoses and treating the pain to training in home-based palliative care. The purpose of the course was to learn various kinds of palliative treatment for residents from the early phase of cancer to the terminal phase. In this study, we evaluated the effectiveness of our mandatory palliative care training course by conducting a retrospective study of the patients' medical records and participants' questionnaire results and discussed the importance of palliative care education for surgical residents. All data were obtained before and after the training course.

METHODS

RESIDENTS

Twelve surgical residents, including seven gastroenterological surgeons, three general surgeons, one pulmonary surgeon, two urological surgeons (both were specialists in urological surgery), one orthopedician (specialist in orthopedic surgery) and one plastic surgeon who participated in the short-term palliative care training course at our hospital, were enrolled in this study. Among them, two were in the fourth year after graduation from medical school, two in the fifth year, three in the sixth year, two in the seventh year, one in the eighth year and two in the ninth year. All surgeons had end-of-life care experience, including pain control or care of terminal patients.

THE TRAINING CURRICULUM

The standard training period for all surgeons was 4 weeks. The main contents of the course included training in control of cancer pain; a pathophysiological understanding of physical pain caused by various conditions such as dyspnea, malaise, nausea and vomiting; an insight into pharmacotherapies and nonpharmacological therapies for physical pain; and training in alleviation of mental, social and emotional problems.

The surgical residents participated in patient treatment along with the staff and the chief resident of the palliative care department. The staff in the palliative care division was always guided by the residents. The treated patients were restricted to inpatients referred to the palliative care department by other doctors of our hospital. The curriculum for the residents was as follows. The residents and staff of the palliative care division made rounds of all patients in the palliative care department at 7:30. Then, each patient's treatment was discussed with all members of the palliative care team at 9:30. Each resident was paired with a palliative care staff member to provide treatment to the allocated patient at 10:00. A lunch meeting and a short lecture were conducted in the department of palliative care for all members of the department during the day. At 13:00, the surgical residents again took rounds of the wards with the palliative care staff.

An evening conference was held at 16:30 by the department of palliative care for all members of the department to discuss patient care. In addition, a round conference was conducted with a doctor from the main department of the patient and associated staff such as a ward nurse and a pharmacist. A conference concerning each nonsurviving case was also held, wherein the treatment provided to the deceased and care for his/her family were discussed. Lastly, a conference on home-based palliative care was held with home doctors. We encouraged residents to be involved in many cases as an educational strategy, so that each resident could gain adequate experience and master in palliative care and treatment with each consecutive case. The educational setting was directed toward each resident taking charge of eight new patients. A resident conducted a detailed medical examination by interview and obtained physical findings for each new patient. After the medical examination, they checked imaging findings such as those of computed tomography and magnetic resonance imaging. A dermatome or osteotome were used to obtain samples for pathophysiological diagnosis. A resident administered treatment on the basis of his/her pharmacology and supportive care knowledge. Physiotherapy formed an integral part of treatment.

We used a numerical rating scale for pain assessment. A decrease of two or more points was considered a significant amelioration. The training course included a week of home-based palliative care training, wherein residents visited each patient's home along with doctors or nurses under the cooperation of local medical associations. Palliative care treatment administered by a resident was always evaluated by the staff and summarized by the department of palliative medicine. In addition to the above protocol, each patient's medical records prepared by the residents were retrospectively reviewed by a specialist staff member in the palliative care division.

THE QUESTIONNAIRES

All residents were also made to answer questionnaires concerning palliative care treatment before and after the training course to evaluate the effects of the course on the residents. The items asked in the questionnaires concerned the following: understanding the significance of a multidisciplinary discussion; management of respiratory symptoms, digestive symptoms, malaise and lymphedema; control of pain, including refractory pain, using opioid and nonopioid analgesics; and analgesic adjuvants and medications to suppress the adverse effects of analgesics. Refractory pain was defined as mild-to-severe pain that persisted despite treatment, and it also included pain that persisted or progressed over a long period of time. The residents were instructed to choose one of the four answers for each item. These answers were as follows: 'I can perform this and explain to others', 'I can perform this with support', 'I am aware of this but cannot perform it in practice' and 'I have no idea'. We also asked all residents about home-based palliative care training after

the course to determine its effectiveness. Analyses of validity and reliability of the questionnaire were performed with SPSS.II software (IBM Institute, Armonk, NY, USA). Reliability of the questionnaire was tested by Cronbach’s alpha, which was determined using our collected data. A factor analysis was conducted to examine construct validity. A structured questionnaire comprising 25 detailed questions to evaluate the effectiveness of the palliative care course was developed and applied to the surgical residents, and its validity and reliability were analyzed.

RESULTS

The 12 surgical residents treated 92 cases in total (average 7.66 cases per resident). The purpose of care in most cases (92.3%) was to mitigate pain. Other purposes were to control dyspnea, malaise, numbness and other symptoms. Prior analgesics used when patients were referred to the palliative care department were opioids for moderate-to-severe pain (morphine, fentanyl and oxycodone; 69.5%), opioids for mild-to-moderate pain (codeine phosphate and others; 2.1%), nonopioid analgesics (nonsteroidal anti-inflammatory drugs and acetaminophen; 76%) and analgesic adjuvants (35.8%).

Initial interventions for cancer pain included the introduction of analgesic adjuvants (23.9%), a change in the administration route or dose of prior opioid analgesics (21.7%), introduction of opioid analgesics (14.1%), introduction of opioid rotation (11.9%), change in dose or type of nonopioid analgesics (9.7%), change in dose or type of analgesic adjuvants (6.5%) and introduction of nonopioid analgesics (4.3%). Other interventions included the administration of epidural blocks and other nerve blocks, physical supportive therapies such as arrangement for a medical corset, radiotherapy and recommendations for surgery (Table 1). The overall pain improvement rate through these interventions was 89.1%.

The response rates for the two questionnaires administered before and after training were 100%. Before participating in the course, the proportion of residents who answered ‘I can

perform this and explain to others’ or ‘I can perform this with support’ did not exceed 50% for any item. However, the figure exceeded 75% for all items after the course. The item for which maximum residents answered ‘I have no idea’ before the course concerned management with analgesic adjuvants, followed by those concerning management of malaise and control of refractory pain (Table 2).³

Furthermore, 50% residents answered ‘Yes, very much’ while 50% answered ‘Yes’ for the item ‘Do you think the course is useful for your future practice?’ after the course. With regard to home-based care, approximately 83% residents answered ‘I acquired knowledge and information on home-based care’ and ‘the experience will change my thoughts and practice related to home-based care’ after the course. Specifically, many residents answered that they were going to change their methods while working with visiting physicians, communicating with visiting nurses, preparing treatment protocols and during various other processes associated with home care (Table 3). The results of a factor analysis derived seven factors, indicating valid questionnaire content for the residents’ survey. The Cronbach’s alpha for each factor was 0.78, indicating sufficient internal consistency.

DISCUSSION

The current system of providing palliative care in Japan is inadequate, although an increased number of medical institutions throughout Japan are establishing palliative care departments. According to the Hospice Palliative Care of Japan, only 244 hospitals in Japan, accounting for 2.6% of all hospitals in Japan, had a palliative care unit in 2012 (3). In addition, the Ministry of Health, Labour and Welfare of Japan reported in 2008 that only 2.3% hospitals had a palliative care ward with palliative care specialists, and that only 4.2% hospitals with a palliative care specialist team and a palliative care ward were designated as cancer care hospitals. Under these circumstances, nonpalliative care specialists address various problems of patients with cancer in many hospitals. Many physicians do not feel comfortable treating incurable patients because their medical knowledge and technical skills are insufficient (4). Nevertheless, clinical experience with such patients should be an essential part of medical education (5). Palliative care skills are considered essential for all physicians who treat cancer, but the development of and the need for a primary palliative care skill set for physicians in training are not well established. Most medical schools in the USA do not emphasize on palliative care training as a requirement for graduation (6) as much as those in Japan. Nevertheless, there is a documented need for palliative care training of doctors at the postdoctoral level, such as residents and fellows, in the USA (7–9). In comparison with doctors in the West, few Japanese doctors believe that ‘I have enough knowledge and skills regarding palliative care’ or ‘I have received sufficient education about

Table 1. Initial interventions for cancer pain

Resident initial intervention	(%)
Assistance of relieving pain medicine Initial interventions for cancer pain were introduction of analgesic adjuvants	24
Change in routes of administration or doses of prior opioid analgesics	22
Introduction of opioid analgesics	14
Introduction of opioid rotation	12
Change in doses or type of non-opioid analgesics	10
Change in doses or type of analgesic adjuvants	7
Introduction of non-opioid analgesics	4
Others	7

Table 2. The questionnaires before and after the palliative care training

	Evaluation before training (%)				Evaluation after training (%)			
	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)
Importance of opinion exchange by multioccupational category	25	33	33				83	17
Management of cancerous pain	25	58	17				83	17
Management of medicine	17	58	25				67	33
Opioid analgesic								
Non-opioid analgesic	17	33	42	8			58	42
Analgesic adjuvants	67	17	17			17	67	17
Medicine of adverse effect measures	33	42	25			13	50	33
Management of respiratory symptom	42	50	8			25	75	
Management of digestive tract symptom	25	33	25	17		17	42	42
Management of malaise	58	42				25	75	
Management of lymphatic edema	33	58	8		8	17	75	
Sedation of refractory pain	42	33	25			17	75	8

The residents were asked to tick one of four grades on each item.

1: I have no idea; 2: I know of this but cannot perform it in practice; 3: I can perform this with support; 4: I can perform this and explain to others.

Table 3. The questionnaires about home-based care

Item	Answer that there is change (%)
Change their ways when they work with visiting change their methods while working with visiting physicians	75
Communicating with visiting nurses	67
Contents of their treatment information	58
Consideration to load concerning the family's nursing	50
Early contact to consultation support center	50
Content of explanation to patient and family	50
How with care manager for relations	50
Consideration to economical load	42
Time of explanation to patient and family	33
Consideration to long term care insurance etc.	33

palliative care (10–13). Of late, a project on palliative care education, called the PEACE project, is being performed for doctors at the postdoctoral level in Japan (14). Although many doctors have received this training and have achieved results, nothing is compulsory.

Traditionally, surgeons have played significant roles in cancer care in Japan. They not only conduct surgeries and provide perioperative care, which are their primary tasks, but also provide endoscopic therapy, chemotherapy and end-of-life care in general wards (15). Through these practices, they build good relationships with cancer patients

by flexibly addressing various changes in a patient's clinical condition throughout the illness course. In contrast, as diversification continues in medical care, team care in which care providers share tasks is becoming mainstream. Unfortunately, the necessity of the team care approach for cancer patients has not been fully recognized (16). There is concern that the current situation may hinder appropriate patient referral to a palliative care specialist team or patient transfer to a palliative care ward or another hospital with palliative care facilities. There is also a report stating that multi-disciplinary teams provide more effective palliative care (16) and that one of the most important tasks for the team is engaging surgeons with adequate knowledge on the patient's postoperative progress and the pathology of metastasized/relapsed cancer in this care.

Our hospital is the only medical institution in Japan that has made palliative care training compulsory for surgical residents. While some other countries conduct education programs and provide guidelines on palliative care for surgeons (17,18), many differences exist between Japan and other countries. Surgeons in other countries mainly conduct surgeries, whereas Japanese surgeons take charge of patient right from making diagnoses and conducting surgeries to providing end-of-life care. We have made the palliative care training course compulsory for all residents since 2009. The entire training system for residents in the hospital is part of second-stage training after graduation from medical school. The surgical residents at our hospital in 2009 were in the fourth to ninth year after graduation, and half of them were specialists. All residents who participated in the palliative care training course had experience in end-of-life care,

including pain control or care of terminal patients. However, none had received professional training in palliative care before participating in our course. In the questionnaire conducted before the course, up to 67% residents answered 'I have no idea' for the item concerning management with analgesic adjuvants, whereas only 1.7% residents gave this answer for the item concerning management with opioid and nonopioid analgesics. This is probably because the use of analgesic adjuvants for pain control is not popular in their previous medical institutions where they had practiced palliative care. In addition, many residents answered 'I have no idea' for items concerning management of malaise and control of refractory pain. None answered 'I can perform this and explain to others' for any of the questionnaire items except those concerning management of digestive symptoms. This may reflect the fact that there were many gastroenterological surgeons among the participants.

The purpose of palliative care is to mitigate pain in most cases, suggesting that pain control is a pillar of palliative care. However, prior therapy with analgesics had already been initiated in many patients before they were referred to the palliative care department. The cases that were already consuming nonopioid or opioid analgesics for moderate-to-severe pain accounted for up to 70%, indicating that most initial pain treatments were administered by surgeons and medical oncologists, and that most cases referred to the palliative care department were those in whom pain control with nonopioid and opioid analgesics was not effective or those in whom the analgesics caused intolerable adverse effects. Therefore, residents participating in the training course needed to introduce analgesic adjuvants and/or make changes in the administration routes or doses of prior opioid analgesics more frequently than introducing nonopioid or opioid analgesics for moderate-to-severe pain. As a result, the residents learnt how to introduce analgesic adjuvants and use opioid analgesics appropriately. The overall symptom improvement rate was 89.1% during the training course. Some cases that showed no improvement were those for whom complete symptom evaluation at baseline was not possible because of delirium or those who did not respond to any analgesic.

Results of the questionnaire analysis revealed that before participating in the course, the proportion of residents who answered 'I can perform this and explain to others' or 'I can perform this with support' did not exceed 50% for any item. However, the figure increased after the course and exceeded 75% for all items, including pain control.

The training course included home-based palliative care training that involved traveling with doctors or nurses to visit patient's homes. In the questionnaire administered after training, >80% residents answered 'I gained necessary knowledge and skills' or 'the experience will change my approach to home care'. Specifically, many of the residents answered that they were going to change their methods while working with visiting physicians, communicating with visiting nurses, preparing treatment protocols and during

various other processes associated with home care. The questionnaire results showed that the course helped residents understand the significance of good communication with visiting physicians and the effective use of home-care by recognizing concerns and backgrounds of home-care patients. They also understood the actual situations and difficulties in providing home care, such as shift timing and medical equipment limitations. While participating in this training course conducted at our hospital, which is one of the designated cancer care hospitals in Japan, they experienced the reality of home-based palliative care with their own eyes.

All residents answered 'Yes, very much' or 'Yes' when asked whether the course would be useful for their future clinical practice. The training period was 4 weeks, which may be relatively short, but we can say that it was fruitful for the participating residents. We expect that after acquiring palliative care knowledge and skills through this professional training course, these resident surgeons will provide cancer patients with better medical care aimed at mitigating their physical pain and providing mental comfort. However, the training may be insufficient with regard to caring for special patients, which requires greater expertise. Therefore, we need to arrange resident supervision by palliative care specialists or extend the course to include this training.

The primary responsibility of surgeons is to apply their expertise to cancer care and fully utilize their knowledge and skills in cancer surgery and chemotherapy. Oncological surgeons build trusting relationships with cancer patients by performing various activities based on sound palliative care knowledge and skills. In a sense, they may become role models for surgeons in other fields. Although there is still room for improvement, the surgical residents answered that it was a meaningful course, that they gained practical palliative care knowledge, and that the experience would change their home-care approach after the training course. This training course appears to be a significant step forward for all surgical residents and course planners at the hospital.

Questionnaires form an important data collection method in a number of situations (19), and they have been used extensively in a variety of studies. There are two basic goals (20) of a questionnaire design. The first is to obtain information relevant to the survey purpose and the second is to collect this information with maximal reliability and validity. The reliability of an instrument can be measured objectively using Cronbach's alpha, which is the most widely used objective measure of reliability. Cronbach's alpha was developed by Lee Cronbach in 1951 (21) to provide an internal consistency measure of a test or scale; it is expressed as a number between 0 and 1. A reliability analysis is conducted to determine questionnaire reliability, and internal consistency of the items is measured using Cronbach's alpha coefficient. A questionnaire is considered to represent a measure of high internal consistency if the total alpha value is >0.7 (22). The reliability of the questionnaire was supported by its alpha value of 0.78. However, the sample size was too small to evaluate validity, and this was only a single cross-sectional

study. It will be necessary to refine the validity and reliability of this scale in the future with more data from diverse samples and more critical scrutiny of validity (23).

In conclusion, we reported the first mandatory training course at a specialized cancer institute in Japan in Japan, which educates surgical residents on palliative care for cancer patients. The surgical residents took charge of an average 7.66 cases during the course, and the purpose of care in most cases was to mitigate pain. The residents were mainly learnt how to use opioids appropriately and when and how to introduce analgesic adjuvants. In addition, they learnt to mitigate the physical pain of cancer patients and provide mental comfort through this professional palliative care training course.

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Conflict of interest statement

None declared.

References

- National Cancer Center. <http://ganjoho.jp/public/statistics/pub/statistics01.html>.
- Wakao F. The basic act on anti-cancer measures based on cancer treatment. *Medicina* 2008;45:1366–9.
- Hospice Palliative Care Japan. <http://www.hpcj.org/what/aboutpcu.html>.
- Blasco PG. *O médico de família hoje*. Sao Paulo, Brazil: SOBRAMFA, 1997.
- Jubelier SJ, Welch C, Babar Z. Competences and concerns in end of life care for medical students and residents. *West Virginia Med J* 2001;97:118–21.
- Van Aalst-Cohen ES, Riggs R, Byock IR. Palliative care in medical school curricula: a survey of United States medical schools. *J Palliat Med* 2008;11:1200–2.
- Holley JL, Carmody SS, Moss AH, et al. The need for end-of-life care training in nephrology: national survey results of nephrology fellows. *Am J Kidney Dis* 2003;42:813–20.
- Mullan PB, Weissman DE, Ambuel B, von Gunten C. End-of-life care education in internal medicine residency programs: an interinstitutional study. *J Palliat Med* 2002;5:487–96.
- Ogle KS, Mavis B, Thomason C. Learning to provide end-of-life care: postgraduate medical training programs in Michigan. *J Palliat Med* 2005;8:987–97.
- Furstenberg CT, Ahles TA, Whedon MB, et al. Knowledge and attitudes of health-care providers toward cancer pain management: a comparison of physicians, nurses, and pharmacists in the state of New Hampshire. *J Pain Symptom Manage* 1998;15:335–49.
- Morita T, Akechi T, Sugawara Y, et al. Practices and attitudes of Japanese oncologists and palliative care physicians concerning terminal sedation: a nationwide survey. *J Clin Oncol* 2002;20:758–64.
- Cherny NI, Catane R. Attitudes of medical oncologists toward palliative care for patients with advanced and incurable cancer: report on a survey by the European Society of Medical Oncology Taskforce on Palliative and Supportive Care. *Cancer* 2003;98:2502–10.
- Low J, Cloherty M, Wilkinson S, et al. A UK-wide postal survey to evaluate palliative care education amongst General Practice Registrars. *Palliat Med* 2006;20:463–9.
- PEACE PROJECT. <http://www.jspm-peace.jp/seminar.html>.
- Nakagawa K, Shiozaki H, Okuno K, et al. About a digestive surgeon's labor environment questionnaire analysis. *Jpn J Gastroenterol Surg* 2007;40:A1–8.
- Kaneko K. Surgical treatment as an integration of specialized cares with responsibilities—team treatment in perioperative care. *J Jpn Surg Soc* 2009;110:61.
- Adolph MD, Dunn GP. Postgraduate palliative medicine training for the surgeon: an update on ABMS subspecialty certification. *Bull Am Coll Surg* 2009;94:6–13.
- Dunn GP, Milch RA, Mosenthal AC, Lee KF, Easson AM, Huffman JL. Palliative care by surgeon: how to do it. *J Am Coll Surg* 2002;194:509–37.
- Abbas T, Charles T. *Handbook of Mixed Methods in Social & Behavioral Research*. California: Sage Publications, Inc., 2002;298.
- Bulmer M, Warwick DP, editors. *Social Research in Developing Countries: Surveys and Censuses in the Third World*, Vol. 11. New York: Routledge 1993;146.
- Cronbach L. Coefficient alpha and the internal structure of tests. *Psychometrika* 1951;16:297–334.
- Downing SM. Reliability: on the reproducibility of assessment data. *Med Edu* 2004;38:1006–12.
- Yusuf S, Collins R, Peto R, et al. Why do we need some large, simple randomized trials? *Statist Med* 1984;3:409–20.