

Ⅲ. 研究成果の刊行に関する一覧表

研究成果の刊行に関する一覧表

書籍

著者氏名	論文タイトル名	書籍全体の編集者名	書籍名	出版社名	出版地	出版年	ページ
木下貴之、藤原康弘、的場元弘、他	国立がん研究センターのがんの本乳がん	小学館クリエイティブ	国立がん研究センターのがんの本乳がん	小学館	東京	2013	
森田達也、的場元弘、他	自宅療養を継続できない理由となる難治性症状に対する支援アルゴリズム プロトタイプ		自宅療養を継続できない理由となる難治性症状に対する支援アルゴリズム プロトタイプ	青海社	東京	2013	
的場元弘、山本弘史、他	医療用麻薬適正使用ガイドン ーがん疼痛治療における医療用麻薬の使用と管理のガイドン ー	厚生労働省医薬食品局監視指導・麻薬対策課	医療用麻薬適正使用ガイドン ーがん疼痛治療における医療用麻薬の使用と管理のガイドン ー	厚生労働省医薬食品局監視指導・麻薬対策課	東京	2012	
橋爪隆弘、小山富美子、吉本鉄介、他	緩和ケアチーム活動の手引き Practical Guidance for Palliative Care Team 第二版	日本緩和医療学会 専門的・横断的緩和ケア推進委員会	緩和ケアチーム活動の手引き Practical Guidance for Palliative Care Team 第二版	日本緩和医療学会	東京	2013	

雑誌

発表者氏名	論文タイトル名	発表誌名	巻号	ページ	出版年
村上敏史、岩瀬哲、西川満則、 <u>的場元弘</u>	在宅医療におけるがん疼痛治療の評価と治療の実態について	日本緩和医療学会誌	In press		
Oya H, <u>Matoba M</u> , Murakami S, Ohshiro T, Kishino T, Satoh Y, Tsukahara T, Hori S, Maeda M, Makino T, Maeda T	Mandatory palliative care education for surgical residents: initial focus on teaching pain management.	Jpn J Clin Oncol	43 (2)	170-175	2013
Kojima KY, Kitahara M, <u>Matoba M</u> , Shimoyama N, Uezono S.	Survey on recognition of post-mastectomy pain syndrome by breast specialist physician and present status of treatment in Japan.	Breast cancer	Epub ahead of print		2012
Yamaguchi T, Narita M, Morita T, Kizawa Y, <u>Matoba M</u>	Recent Developments in the Management of Cancer Pain in Japan: Education, Clinical Guidelines, and Basic Research.	Jpn J Clin Oncol	42 (12)	1120-1127	2012
<u>吉本鉄介</u>	がん疼痛治療の新しい選択肢，純粹オキシコドン注射剤—どういう症例に，どうやって使う？—	がん患者と対症療法	23 (1)	8-14	2012
<u>Higashi T</u> , Nakamura F, Shimada Y, Shinkai T, Muranaka T, Kamiiike W, Mekata E, Kondo K, Wada Y, Sakai H, Ohtani M, Yamaguchi T, Sugiura N, Higashide S, Haga Y, Kinoshita A, Yamamoto T, Ezaki T, Hanada S, Makita F, Sobue T, Okamura T.	Quality of Gastric Cancer Care in Designated Cancer Care Hospitals in Japan.	Int J Qual Health Care	In press		2013

Higashi T, Nakamura F, Saruki N, Sobue T.	Establishing a Quality Measurement System for Cancer Care in Japan.	Jpn J Clin Oncol	43 (3)	225-232	2013
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Ono R, Higashi T, Takahashi O, Tokuda Y, Shimbo T, Endo H, Hinohara S, Fukui T, Fukuhara S.	Sex differences in the change in health-related quality of life associated with low back pain.	Qual Life Res	21 (10)	1705-1711	2012
Higashi T, Yoshimoto T, Matoba M.	Prevalence of Analgesic Prescriptions among Patients with Cancer in Japan: An Analysis of Health Insurance Claims Data.	Glob J Health Sci	4 (6)	197-203	2012
Nakamura F, Higashi T.	Pattern of prophylaxis administration for chemotherapy-induced nausea and vomiting: an analysis of city-based health insurance data.	Int J Clin Oncol.	Epub ahead of print		2012
Zhang M, Higashi T, Nishimoto H, Kinoshita T, Sobue T.	Concordance of hospital-based cancer registry data with a clinicians' database for breast cancer.	J Eval Clin Pract	18 (2)	459-464	2012
富安志郎、内田新、尾関あゆみ、木下真理子	【オキシコドン製剤を使いこなす】経口オピオイドからオキシコドン注射剤への切り替え	がん患者と対症療法	23 (1)	15-20	2012

IV. 研究成果の刊行物・別刷

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自宅療養を継続できない理由となる 難治性症状に対するアルゴリズム

プロトタイプ

この小冊子では、2012年7月に在宅緩和ケアを行っている医師を対象として実施されたアンケート調査において、がん患者の在宅緩和ケアを行う上で「このような資料があったらよい」との意見をいただいたもののうち、既存の資料にあまりないものを「試み」としてまとめたものです。

内容

- 1 終末期がん患者の病状の変化と余命の予測……………2
- 2 消化管閉塞により内服・飲水ができなくなった場合の対応……………4
- 3 死亡直前期の臓器不全による呼吸困難とせん妄の対応……………6
- 4 看取りの時の臨時指示例……………8
- 5 資料……………9
 - 1) オピオイド力価換算表
 - 2) オピオイドのレスキュー計算表
 - 3) 緩和ケアで使用される向精神薬一覧

◆使用上の注意

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- ・緩和医療、在宅医療の臨床経験のある複数の医師で日本緩和医療学会のガイドラインなどをもとに作成したものです。患者に対して有効であることが確認されたものではありません。
- ・実地臨床で使用されている薬剤を記載しています。保険適応はないものが多くあります。

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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

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

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 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.

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Survey on recognition of post-mastectomy pain syndrome by breast specialist physician and present status of treatment in Japan

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Abstract

Background Post-mastectomy pain syndrome (PMPS) is chronic pain after breast cancer surgery and is reported to influence quality of life (QOL). Although the results of a survey in Japan showed high incidence, at 21–65 %, many of the patients had never been treated for PMPS. One reason for this low treatment rate may be poor understanding of PMPS by medical personnel. In this study, we conducted the survey by using questionnaire to assess current treatment and the recognitions of the medical personnel.

Methods We mailed a questionnaire to 647 specialist members of the Breast Cancer Society.

Results Of those, 34.7 % responded. While PMPS was recognized by as much as 70.5 % of responding physicians, it was treated by as little as 47.7 % of the responders. In addition, while non-steroidal anti-inflammatory drugs (NSAIDs), which were ineffective in relieving PMPS, were used by 78.4 % of the responders, effective drugs were rarely used; therefore, treatment was considered ineffective by 69.5 %. This indicates that appropriate therapies are not

widely used, and none of the current therapies are very effective.

Conclusions The results showed high recognition of PMPS pathology among physicians, but the treatment rate was as low as 47.7 %. NSAIDs were the main treatment, and the treatment effects were not satisfactory. It was revealed that currently appropriate treatment modalities have not been widely used. Education of physicians, distribution of treatment information and further studies are considered necessary for the spread of appropriate treatment modality.

Keywords Breast Cancer ·
Post-mastectomy pain syndrome ·
Recognition by physicians · Quality of life · Treatment

Introduction

Post-mastectomy pain syndrome (PMPS) is chronic pain after breast cancer surgery that remains for a long time. PMPS is reported to have influence on postoperative quality of life (QOL) [1–11]. Although recent studies indicate that the PMPS incidence is as high as 30–70 % [8, 12–15], the number of patients treated has been limited and treatment effects have been poor, which is considered to be a problem in Europe and the US [4, 5, 8, 9, 14, 16, 17]. The pain appears to be caused by peripheral neuropathy primarily in the intercostobrachial nerve [6, 7]. Recent reports have shown that this pain occurs not only after mastectomy, but also after other procedures for treating breast cancer, breast conserving surgery, tumor enucleation, and breast reconstructing surgery [8, 13, 18]. It has also been reported that the pain occurs after sentinel lymph node biopsy and in patients in whom the intercostobrachial nerve

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was preserved [5, 15, 18]. Breast cancer is the most common cancer among women in Japan, affecting 1 in 20 women, and the incidence is increasing every year. Younger women in their 40s and 50s, who are busy with child care and work, are most affected by the disease. Survival rates of breast cancer in Japan are high, with 10-year survival rates of approximately 90 % at stage I and 80 % at stage II [19]. Postoperative QOL has large influence on the family and society, as well as on the patient herself. Recently, the problem of chronic pain has risen with the improvement of cancer survival rates [11, 15, 20]. Although the results of a survey in Japan showed high incidence, at 21–65 % (2–9 years post-surgery), many PMPS patients who have sought outpatient consultation have never been treated for the pain. Not knowing that there are treatment methods available, many gave up the idea that their pain could be alleviated [5, 8, 17]. One reason for this could be a poor understanding of PMPS by medical personnel. In addition, surveys of present status of PMPS treatment in Japan have rarely been conducted. We planned this study to better understand awareness of and current treatment of PMPS in patients undergoing breast cancer surgery by physicians in Japan to identify the problems faced and thus facilitate development of more appropriate treatments to improve the quality of life of patients.

Patients and methods

As no similar survey on the recognition of chronic postoperative pain in patients with cancer has been conducted, a questionnaire was initially prepared based on other studies of chronic pain and surveys of physicians [5, 9, 10, 15, 20–25], as shown in Table 1. Before conducting the survey, we explained the purpose of the survey to the Board of Directors of the Japanese Breast Cancer Society and received approval for the survey. We then requested the Head Office of the Society to disclose information on members of the Society, but were not given permission in light of protection of personal information. Only labels with the postal address and name of specialists required for the postal survey were provided. A request for cooperation, explaining the purpose of the research, and a questionnaire were posted to all 647 specialists of the Japanese Breast Cancer Society in March 2007. The responses were collected by fax. The responding period was 3 weeks. Each specialist signed the questionnaire. The questionnaire consisted of questions regarding recognition of postoperative chronic pain, recognition and experience of PMPS, and current treatment of PMPS and its efficacy. After tallying the results, their opinions on the remaining pain, and relationship between their recognition of PMPS and their

experience and policy of treatment of PMPS were evaluated. Statistical analysis was performed using the Mann-Whitney *U*-test, and $p < 0.05$ was considered statistically significant.

Results

The recovery rate of the questionnaire was 34.7 % (647 distributed; 224 responded; 2 returned as undeliverable).

Background of respondents

The backgrounds of respondents are shown in Table 2.

Questions regarding recognition of postoperative chronic pain

A total of 223 respondents answered the question about prolonged pain associated with surgery, and 1 respondent did not answer the question. The results are shown in Table 3.

Questions regarding recognition and experience of PMPS

Table 4 shows the recognition and duration of PMPS. The incidence of PMPS was 0 % for 4.5 % of the responders, 20 % for 49.5 %, 40 % for 16.2 %, 60 % for 3.2 %, 80 % for 5.0 %, 100 % for 0.9 %, and unknown for 20.7 %. The current number of patients who were diagnosed with PMPS was 0 for 16.4 % of the responders, 5 or fewer for 40 %, 10 or fewer for 10.9 %, less than 20 for 8.2 %, 20 or more for 7.3 %, and unknown for 17.3 %. Regarding the treatment of PMPS, 51.8 % experienced difficulty, while 48.2 % did not experience difficulty.

Questions regarding the current treatment modality and its effects

A total of 222 respondents answered the question about current management of patients with pain, and 2 respondents did not answer the question. The results are shown in Table 5. In addition to 106 physicians who answered the previous question with a reply that “treatment is administered by myself,” 10 answered the question regarding current treatment modality. The results are shown in Table 6. Treatment effects are shown in Table 7. The anticonvulsants gabapentin and pregabalin were not included among the test drugs, because the former had only recently entered the market and the latter was not yet on the market in Japan at the time of the survey.

Table 1 Questionnaire

Affiliation _____	Name _____
Specialty _____	Experience _____ yrs Gender male • female
A. Basic information	
1) How many cases of breast cancer operation did you have in your hospital last year? (excluding biopsy only) _____/year	
2) What is your opinion about prolonged postoperative pain? (Multiple choice)	
① Nothing can be done. ② Pain rarely occurred. ③ There is no need for treatment.	
④ Pain will resolve with time course. ⑤ I should focus on the cancer treatment because pain is a secondary symptom. ⑥ It is difficult to explain to the patients.	
⑦ I want to do something for my patients. ⑧ Pain needs to be treated. ⑨ I want to know how pain can be treated. ⑩ I should consult a pain specialist.	
⑪ Other (_____)	
B. Regarding Postmastectomy Pain Syndrome (PMPS)	
1) Do you know what PMPS is?	
① Yes ② No	
2) How often do you think the PMPS occurred after surgery?	
① 0% ② 20% ③ 40% ④ 60% ⑤ 80% ⑥ 100% ⑦ I don't know.	
3) How long do you think PMPS will last after the operation?	
① 1 year ② 3 years ③ 5 years ④ 7 years ⑤ More than 10 years ⑥ I don't know.	
4) How many patients with PMPS do you have now?	
① 0 ② 1~5 ③ 5~10 ④ 11~20 ⑤ 21~ ⑥ I don't know.	
5) Have you ever experienced any difficulty in treating PMPS?	
① Yes ② No	
6) How do you treat patients with PMPS now? (Multiple choice)	
① No treatment, with observation ② Treat by myself ③ Alternative medicine	
④ Let patients treat themselves in their own way ⑤ Consult pain specialist	
⑥ Other (_____)	
7) Questions for those who chose ② in question 6).	
a) What do you use for treatment now? (Multiple choice)	
① NSAIDs ② Opioids ③ Tranquilizers ④ Antidepressants	
⑤ Herbal medicines ⑥ Topical preparations ⑦ Nerve blocks ⑧ Local injections	
⑨ Rehabilitation ⑩ Acupuncture ⑪ Other (_____)	
b) How effective do you think the treatments are?	
① Not effective ② Slightly effective ③ Moderately effective ④ Very effective ⑤ I don't know.	
8) Do you think we should disclose treatment information regarding PMPS to patients?	
① Yes ② No ③ I don't know.	

Question regarding the recognition of patient education by physicians

Other

Disclosure of therapeutic information to patients was considered to be necessary by 77.4 % of the responders, unnecessary by 3.0 %, and unknown by 19.6 %.

Furthermore, we investigated the recognition of PMPS and presence/absence of treatment. Current treatment was investigated in the recognizing group ($n = 158$) and the unrecognizing group ($n = 66$). The number of physicians