

**[ ORIGINAL ARTICLE ]**

# Comparative Analysis of the Attitudes toward Palliative Care between Medical Oncologists and Pulmonologists

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**Abstract:**

**Objective** In Japan, both medical oncologists and pulmonologists treat lung cancer patients; however, the difference in their attitude toward palliative care referral is unknown. Thus, we retrospectively investigated the difference in attitudes toward palliative care referral between medical oncologists and pulmonologists in Japan.

**Methods** We retrospectively reviewed the charts of patients with thoracic malignancy who died at Shimane University Hospital between June 2011 and October 2015. We compared the patients' demographics and medical history according to their doctor's specialty (i.e., medical oncologist or pulmonologist).

**Results** We identified 182 patients, among whom 90 were treated by medical oncologists and 56 by pulmonologists at the outpatient clinic. Thirty-six patients did not undergo outpatient clinic treatment. Out of 59 patients, 22 (37.3%) referred by medical oncologists, and 7 out of 36 patients (19.4%) referred by pulmonologists, were referred to palliative care specialists in the outpatient setting ( $p=0.107$ , Fisher's exact test). The median survival time after admission to PCU was 21 (95% CI: 13-32) and 9 (95% CI: 5-15) days among the patients treated by medical oncologists and pulmonologists, respectively ( $p=0.128$ ).

**Conclusion** Medical oncologists are more likely to refer their patients to palliative care in the outpatient setting, thus enabling patients to receive longer end of life care in the PCU. Bridging the research gap regarding differences between the physicians' attitudes toward palliative care referral may lead to patients receiving more quality palliative care.

**Key words:** lung cancer, chemotherapy, palliative care, medical oncologist, pulmonologist

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## Introduction

Cancer is the leading cause of death in Japan. Approximately 1,000,000 people are affected by cancer and circa 370,000 die of cancer every year. Due to the aging population in the country, the number of cancer patients is increasing (1-3).

Previous reports showed that the early initiation of palliative care for patients with metastatic non-small-cell lung cancer benefits their survival (4-6). One study compared the survival data among patients who received early palliative care integrated with standard oncologic care and those who received only the latter; the results showed that the median

survival was longer among patients who received early palliative care (11.6 months vs 8.9 months,  $p=0.02$ ), and these patients showed a better quality of life than patients assigned only to standard care (4). This result supports the early initiation of palliative care, which is recommended in the treatment guidelines related to lung cancer (5, 6).

Although the importance of the early initiation of palliative care has been recognized, the number of board-certified palliative medicine specialists remains limited. In the United States, since 2008, member boards of the American Board of Medical Specialties (ABMS) and the American Osteopathic Association (AOA) have certified 8,179 physicians as specialists in the practice of hospice and palliative medicine (7).

In Japan, the Japanese Society for Palliative Medicine has started to provide specialty-level certifications; however, by 2020, there were only 273 specialists certified by this institution (8). Thus, owing to the insufficiency of experts in palliative care medicine, all Japanese clinicians are supposed to practice initial palliative care; this has created a situation in which doctors who conduct initial chemotherapy often provide a referral to palliative care medicine experts at their own discretion. Indeed, all physicians who treat cancer patients are encouraged to take a palliative care workshop. Moreover, all fellows of the Japanese Society of Internal Medicine are expected to be able to perform palliative care, the certification of which is required for board-certified pulmonologists.

Relevant to this, a study showed that the timing of referral to palliative care specialists influences patients' survival (4), quality of life (4, 9, 10), and sense of abandonment (e.g., from the family) (11), among others. Contrary to the current situation in Japan, several studies have shown that doctors should not differ in the time they take to make a referral, and the optimal timing for such referral has already been thoroughly investigated (4, 9, 10, 12-15). Both oncologists and pulmonologists treat lung cancer patients in Japan (16). Hui et al. reported differences in the timing of referral between hematologic specialists and solid tumor specialists, suggesting that there are differences in the attitude to referral depending on doctors' specialty (17). Similar reports of differences in the timing of referrals to palliative care specialists between Japanese medical oncologists and pulmonologists who treat lung cancer patients are, to the best of our knowledge, non-existent. Thus, we retrospectively investigated the differences in the attitude toward palliative care referral between medical oncologists and pulmonologists in Japan. We herein show that medical oncologists tended to refer their patients to palliative care specialists earlier than pulmonologists, and early referral to palliative care specialists led to a longer stay in the palliative care unit (PCU).

## Materials and Methods

### Patients

We retrospectively identified the thoracic malignancy patients who were treated at Shimane University Hospital and died between June 2011 and October 2015. After identification, we extracted the following data from patients' medical charts regarding their demographics and medical history: sex, age, date of last chemotherapy, date of referral to palliative care specialist, date of death, date of admission to a palliative care ward, and the doctor's specialty.

Specifically, the study setting was the researchers' department; during the study period, there were seven board-certified medical pulmonologists who treated lung cancer patients, among whom three were also board-certified medical oncologists. Board-certified medical oncologists were de-

fined as medical oncologists, and the remainder were considered pulmonologists. The patients who underwent outpatient clinic treatment were divided into two groups, medical oncologist group and pulmonologist group, depending on their doctor's specialty. We excluded the patients who did not receive outpatient clinic treatment from the comparative analysis between medical oncologists and pulmonologists. This study was reviewed and approved by the Institutional Review Board of Shimane University Faculty of Medicine (20180425-1).

### Variables

#### Pulmonologists and medical oncologists

We defined doctors who were certified by the Japanese Respiratory Society and Japanese Society of Medical Oncology as pulmonologists and medical oncologists, respectively. To compare pulmonologists and medical oncologists, the data of their patients treated in an outpatient setting were used for analysis.

#### Timing of chemotherapy discontinuation

In order to confirm whether medical oncologists and pulmonologists treated lung cancer patients similarly, we compared the timing of their discontinuation of chemotherapy. We measured this by calculating the length of time between stopping chemotherapy and the date on which the patient died. The date of their last chemotherapy treatment was defined as the date on which their doctors last prescribed chemotherapeutic agents.

#### Timing of referral to palliative care specialists

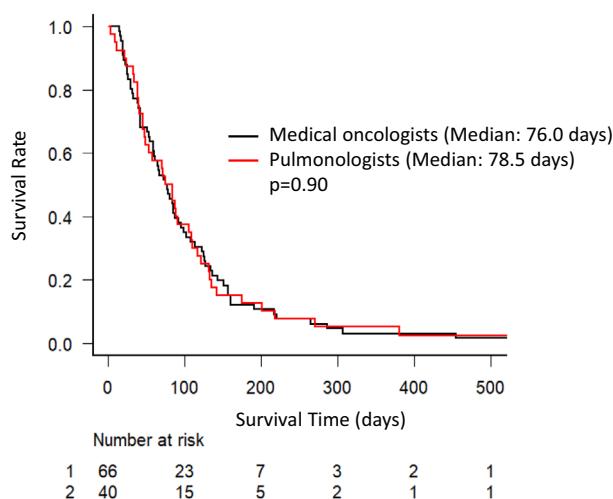
When patients with cancer can no longer live in their own houses owing to a decline in their ability to perform their activities of daily living, they are supposed to be admitted to a palliative care ward, hospice, or a similar facility. Thus, in order to investigate whether medical oncologists and pulmonologists sufficiently prepare for their patients' deterioration in advance, we surveyed the time they took to refer patients to palliative care specialists. We defined the date on which a doctor sent a letter to palliative care specialists to refer their patients as the date of referral. The time to referral was measured as the interval between the date of referral and the date of death.

### Statistical analysis

We analyzed the continuous variables using Student's *t*-test, dichotomous variables using Fisher's exact test, the estimated survival time by the Kaplan-Meier method, and compared the groups using the log-rank statistical analysis. The results were expressed as hazard ratios (HRs) with a 95% confidence interval (CI). A p value of <0.05 indicated statistical significance. We conducted statistical analyses using the EZR software program (Saitama Medical Center, Jichi Medical University, Saitama, Japan) (18).

**Table.** Patients' Characteristics.

	Medical oncologists n=90	Pulmonologists n=56	No outpatient clinic n=36
Age			
Median	71.0	76.0	77.5
Range	49-93	50-88	49-98
Gender			
Male	75	45	27
Female	15	11	9
Histology			
Adenocarcinoma	39	25	18
Squamous cell carcinoma	26	17	6
Small cell carcinoma	10	7	5
Others	15	7	7



**Figure 1.** Survival after the last chemotherapy treatment. The figure shows Kaplan-Meier estimates of overall survival after the last chemotherapy treatment. In the 66 patients who were treated by medical oncologists, the median overall survival was 76.0 days (black). In the 40 patients who were treated by pulmonologists, the median overall survival was 78.5 days (red).

## Results

### Patients' characteristics

During the study period, we identified 182 deceased patients who were treated in the identified hospital: their median age was 74 (range: 49-97 years), 147 were male, and 35 were female. Histologically, these were the types of thoracic malignancies we identified: 82 adenocarcinomas, 49 squamous cell carcinomas, 22 small cell carcinomas, and 29 other types. Ninety patients were treated by medical oncologists, and 56 were treated by pulmonologists in an outpatient setting. Thirty-six patients were admitted directly to the hospital without visiting the outpatient clinic. Table shows the patients' characteristics and the comparison between the

patients who were treated by medical oncologists and those treated by pulmonologists.

### Differences between medical oncologists and pulmonologists regarding the timing of chemotherapy discontinuation

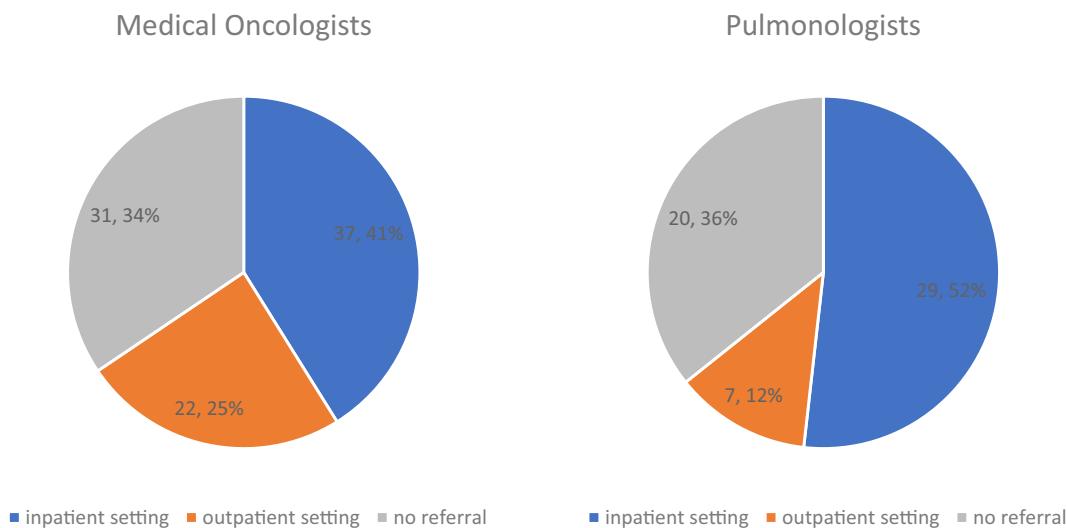
Sixty-six patients who were treated by medical oncologists and 40 treated by pulmonologists received at least one chemotherapy session. Among the former, the median survival time after the last chemotherapy was 76.0 days (95% CI: 58-91); among the latter, it was 78.5 days (95% CI: 47-105), and there were no statistically significant differences between the two groups ( $p=0.90$ ; Fig. 1).

### Differences between medical oncologists and pulmonologists regarding the timing of specialized palliative care referral

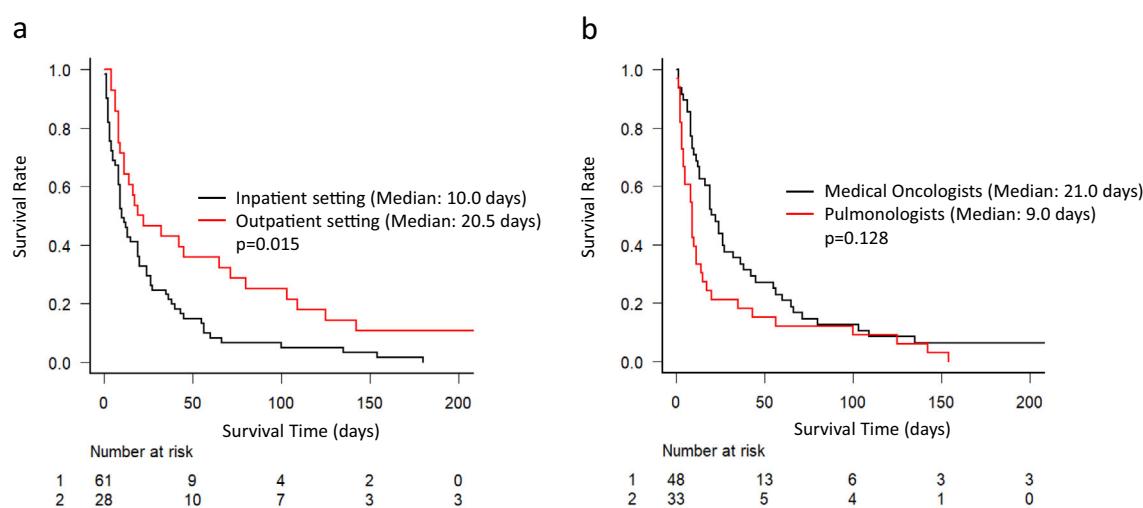
Among the 90 patients who were treated by medical oncologists, 59 (65.5%) were referred to palliative care specialists and 48 (53.3%) were admitted to the PCU at Shimane University Hospital. Among the 56 treated by pulmonologists, 36 (64.3%) were referred to these specialists and 33 (58.9%) were admitted to the PCU (Fig. 2). Regarding those who were admitted to the PCU, medical oncologists and pulmonologists referred their patients to palliative care specialists 33.5 (inter quartile range, IQR: 14.00-77.25) and 30.0 (IQR: 7.75-50.25) days prior to the patients' death, respectively ( $p=0.296$ ).

Among the 59 patients who were referred by medical oncologists, 22 (37.3%) were referred to palliative care specialists in the outpatient setting (the remaining 62.7% were referred in the inpatient setting). Among the 36 referred by pulmonologists, 7 (19.4%) were referred to palliative care specialists in the outpatient setting ( $p=0.107$ , Fisher's exact test). The remaining 80.6% were referred in the inpatient setting.

Among all patients who were referred to palliative care specialists, 89 were admitted to a PCU. Among these 89 patients, the length of time regarding the end of life care received in the PCU was significantly different between the



**Figure 2.** Timing of referral to palliative care specialists. Among the 90 patients who were treated by medical oncologists, 37 (41%) and 22 (25%) patients were referred to palliative care specialists in the inpatient setting and the outpatient setting, respectively. Thirty-one (34%) were not referred. Among the 56 patients who were treated by pulmonologists, 29 (52%) and 7 (12%) patients were referred to palliative care specialists in the inpatient setting and the outpatient setting, respectively. Twenty (36%) were not referred.



**Figure 3.** Patients' survival after palliative care unit admission. The figure shows Kaplan-Meier estimates of overall survival after PCU admission. a) In the 61 patients who were referred to palliative care specialists in the inpatient setting, the median overall survival was 10.0 days (black). In the 28 patients who were referred in the outpatient setting, the median overall survival was 20.5 days (red). b) In the 48 patients who were treated by medical oncologists, the median overall survival was 21 days. In the 33 patients who were treated by pulmonologists, the median overall survival was 9.0 days.

patients who were referred to the inpatient setting and those to the outpatient setting: 10.0 (95% CI: 8-19) and 20.5 (95% CI: 11-65) days, respectively ( $p=0.015$ ; Fig. 3a).

#### Differences in the patients' survival time after admission to a PCU between those treated by medical oncologists and those by pulmonologists

Among the 95 patients who were referred to palliative care specialists, 81 were admitted to the PCU. Among those

who were treated by medical oncologists, the median survival time after admission to the PCU was 21 days (95% CI: 13-32); among those who were treated by pulmonologists, it was 9 days (95% CI: 5-15;  $p=0.128$ ) (Fig. 3b). Thus, patients who were treated by medical oncologists tended to remain longer in the PCU than those treated by pulmonologists.

## Discussion

In this study, our two major findings were that medical oncologists tended to refer their patients to palliative care specialists earlier and with a higher rate of an outpatient setting than pulmonologists, and that early referral to palliative care specialists led to a longer stay in the PCU. To the best of the researchers' knowledge, this is the first study suggesting that Japanese medical oncologists refer their patients to palliative care specialists earlier than pulmonologists.

Moreover, the survival time after the last chemotherapy between patients who were treated by medical oncologists and pulmonologists was almost identical (98.5 vs. 97.0 days, respectively). Specifically, this result suggests that both medical oncologists and pulmonologists indicated chemotherapy treatment based on the same criteria, which are mentioned in both Japanese and American treatment guidelines. However, these guidelines do not provide information on appropriate referral criteria; therefore, it is provided at the doctors' discretion.

Additionally, our results showed that, in the inpatient setting, 62.7% of the patients who were treated by medical oncologists and 80.6% of those who were treated by pulmonologists were referred to palliative care specialists. The first ratio is close to that of patients who were admitted to the PCU from the acute care ward in the National Cancer Center Hospital East (63.2%), which is one of the largest cancer centers in Japan (19). As mentioned above, Hui et al. reported differences in the attitude toward palliative care between hematologic and solid tumor specialists (17); specifically, solid tumor specialists are more likely to refer their newly diagnosed symptomatic patients to palliative care specialists compared to hematologic specialists. This report also suggests that each specialty has a different attitude toward palliative care. Nonetheless, there is a sample difference between our study and that of Hui et al. (17); their sample comprised solid tumor and hematologic specialists, who treat different cancer types, whereas our sample comprised medical oncologists and pulmonologists, both of whom treat patients with thoracic malignancies. Doctors' attitudes toward palliative care can be influenced by disease characteristics such as sensitivity to chemotherapy, rate of the patient's deterioration, and natural course of the disease. Therefore, we were able to eliminate disease trajectory differences when we compared attitudes toward palliative care between medical oncologists and pulmonologists, thus suggesting that our results may accurately depict such differences.

Moreover, our results showed that early referral to palliative care specialists led to a longer stay in the PCU despite the fact that oncologists and pulmonologists stopped chemotherapy at almost the same time prior to the patient's death. This correlates with the findings of Greer et al., who conducted a clinical trial to investigate the impact of early initiation of palliative care compared to standard care (10).

Their results showed that patients who received early palliative care spent 24.0 days in hospice, whereas those who received standard care spent 9.5 days (10). Thus, our study concurs with the previous literature in that early initiation of palliative care leads to patients receiving specialist palliative care for a longer duration. A longer stay in the PCU is not necessarily good for patients and their families. However, Nakajima et al. reported that early referral to palliative care specialists improves not only physical symptoms but also patients' satisfaction regarding where they will spend the rest of their lives (20). Palliative care specialists help patients to make various decisions, including the discontinuation of chemotherapy and where the patient will reside. Therefore, we consider the longer stay in the PCU shown in this study to have led to the patients experiencing better care and greater satisfaction. There is a correlation between the endpoints of this study, the referral timing to palliative care specialists and the length of stay in the PCU. Ideally, if doctors could refer the patients in the early stage of their disease, regardless of the patients' PCU need (e.g., at diagnosis or chemotherapy discontinuation), patients would spend the same amount of time in the PCU. However, due to the shortage of palliative care specialists in our facility, doctors refer patients to these specialists when the patients need care in the PCU. Therefore, the latest referral that does not reduce the length of stay in the PCU may be the appropriate timing for referral to the palliative care specialists in our facility. Moreover, this may be true for all such cases in Japan, since the number of such specialists is limited throughout the country. As a result, this phenomenon should be investigated in another nationwide clinical trial.

Overall, our study implies that, when treating lung cancer patients, Japanese medical oncologists may be more conscious about the need for palliative and end of life care than pulmonologists. Notwithstanding, in Japan, the number of medical oncologists is limited (21); owing to this human resource shortage, Japanese medical specialists are often the persons who treat patients with cancer in the organ of their expertise. This specific setting allows for the understanding that, in the cancer treatment setting in Japan, results similar to ours may be found across different medical specialties. Thus, future large-scale nationwide studies are warranted to investigate the differences in Japanese physicians' attitudes toward palliative care referral and the appropriate interventions to address such differences. We believe such knowledge may lead to a better understanding of cancer treatment in Japan and help us to better identify cancer patients who need palliative care. For example, we suggest that an intervention aimed at modifying physicians' attitudes toward palliative care - among those who have been utilizing ambiguous recommendations for such referrals - could help modify physicians' clinical approach through adherence to empirically efficient guidelines. Moreover, this could help a palliative care multidisciplinary team to identify and support patients when performing "palliative care screening," which is supposed to occur in base hospitals for cancer treatment.

This may help ensure a greater quality of life among Japanese patients requiring palliative care.

Finally, although our study methodology did not allow us to identify the mechanisms underlying the inter-group differences regarding attitude toward palliative care referral, we speculate as to why these results were observed. One speculation relates to board certification curriculum differences between the two studied groups: that for board-certified medical oncologist includes palliative care and end of life care (22), whereas that for board-certified pulmonologists does not (23). Indeed, Inoue et al. reported the benefits of a nationwide palliative care education program for lung cancer physicians (24). In corroboration, a study showed that education is very important to achieve integration between oncology and palliative care (25). Thus, we believe this may be one of the reasons for the inter-group differences in attitude toward referral for palliative and end of life care.

Our study is associated with some limitations. First, our study setting comprised a single institution, and our sample size was limited; thus, our results do not allow for generalizations (e.g., that all medical oncologists refer their patients to palliative care specialists later than pulmonologists). In order to confirm this inter-group difference, we suggest that future studies involve nationally representative samples.

Second, although the timing of referrals and their location (outpatient or inpatient) are affected by various factors (e.g., family structure, the presence of hospice care facilities and/or palliative care wards, the presence and number of long-term care beds, the number of palliative care specialists), our study setting provided us with limited possibilities; namely, there was a limited number of wards and doctors dedicated to palliative care and end of life care in our region. Thus, referral to palliative care specialists in our study setting actually meant referring patients to a treatment similar to hospice care. This made it difficult for the researchers to practice medical referral in accordance with the criteria proposed by previous studies (25-27).

Third, our study methodology does not allow us to identify the mechanisms underlying the inter-group differences regarding attitudes toward palliative care referral; thus, future longitudinal studies are warranted to investigate these underlying mechanisms.

## Conclusion

In summary, medical oncologists tended to refer their patients to palliative care specialists earlier than pulmonologists. Moreover, the early referral to palliative care specialists led to a longer stay in the PCU. Hence, in order to eliminate cancer care disparities amongst Japanese physicians, future studies with larger and nationally representative samples and that develop/propose appropriate interventions to address such disparities are needed.

**The authors state that they have no Conflict of Interest (COI).**

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